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Massachusetts Administrative Council on Toxics Use Reduction

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Fiscal Year 1996 Annual Report

December 1996

Massachusetts Administrative Council
on
Toxics Use Reduction

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December, 1996

Dear Reader,

The Massachusetts Administrative Council on Toxics Use Reduction is again pleased to present its annual report to the legislature in accordance with Section 4(d) of MGL 21I, the Toxics Use Reduction Act (TURA) of 1989.

Massachusetts industries have excelled in their efforts to reduce unnecessary chemical use, to increase their efficient use of needed chemicals and to reduce their generation of toxic waste. As this report shows - for the sixth year in a row - toxics use reduction is indeed prospering is Massachusetts, improving our environment through the promotion of more efficient, cleaner production processes.

The Council offers its thanks to the members of the Toxics Use Reduction Advisory Board and its chair, Sue Swedis, for the continued support, and wishes to recognize the tremendous dedication and efforts of the Science Advisory Board, chaired by Dick Clapp.

As always, the Council is grateful for the work of all its staff at the Office of Technical Assistance, the Toxics Use Reduction Institute, the Department of Environmental Protection and the Executive Office of Environmental Affairs. The staff's consistent high quality of work has paid great dividends to the industries, the citizenry and the environment here in Massachusetts.

Cordially,

Trudy Coxe

Trudy Coxe

100% RECYCLED PAPER

ANNUAL REPORT OF THE ADMINISTRATIVE COUNCIL ON TOXICS USE REDUCTION FISCAL YEAR 1996

This is the Fiscal Year (FY) 1996 Annual Report of the Administrative Council on Toxics Use Reduction (Council), prepared in accordance with the requirements of the 1989 Toxics Use Reduction Act (TURA). In this report, the Council summarizes the accomplishments of the Toxics Use Reduction (TUR) program and its five entities: the Council, the Advisory Board on Toxics Use Reduction (Board), the Office of TUR Assistance (OTA), the Toxics Use Reduction Institute (TURI) and the Department of Environmental Protection's (DEP's) TURA Office. Also presented are the FY 97 strategic plans for the TURA program and its five entities in fiscal year 1997, as well as a budget breakdown of TURA fees collected and expended. Information presented in this report supplements that found in the Council's first Annual Report, published in November 1994 and the Council's FY 1995 Report, published in December 1996.

EXECUTIVE SUMMARY

After long negotiations between industry and environmental activists, the Massachusetts legislature unanimously passed the Toxics Use Reduction Act (TURA) of 1989, making Massachusetts the first state in the nation to legislate pollution prevention. TURA was not a weak compromise, it was a strong consensus that defined a new model of industry/government collaboration to achieve six goals: the reduction of toxic byproduct generation in Massachusetts by half by the year 1997 from a baseline of 1987, the establishment of toxics use reduction as the preferred method of achieving environmental compliance, the promotion of the competitive advantage of Massachusetts businesses, the reduction of toxic substances use within the commonwealth, the strengthening of environmental enforcement and the promotion of coordination between state agencies that administer toxics-related programs. To achieve these goals, the Act did not require Massachusetts facilities to reduce toxics use or to meet specific waste reduction goals. Rather, the Act required that facilities report on their use of toxics and their generation of toxic byproducts and go through a bi-annual planning process designed to identify and evaluate cost-effective opportunities for toxics use reductions (TUR), such as input substitution, product reformulation, production unit redesign or modification, production unit modernization, improved operation and maintenance of production unit equipment and methods, and recycling, reuse or the extended use of toxics. The Act provided for the collection of industry fees to support the provision of technical assistance, education, training, research and technology transfer services through OTA, TURI and DEP.

TURA SUCCESS - Fiscal Year 1996 marked the beginning of the seventh year of the TUR program in Massachusetts, the fifth year of industry reporting under TURA, the third year of full staffing for OTA, TURI and DEP, and the first year following the implementation of TURA plan requirements. As this report verifies, the resources devoted to TURA have been well targeted. TURA is nationally and internationally recognized as a successful approach to promote environmental protection and economic progress through cleaner, more efficient production.

Data confirm that Toxics Use Reduction is sound environmental policy:

- Massachusetts industries have achieved a 25% reduction in their generation of toxic byproducts from 1990 to 1994 (data normalized for production levels) - That's 16 million pounds of toxic waste eliminated!
- Massachusetts industries have reduced their toxic chemical use by 17% from 1990 to 1994 (data normalized for production levels) - That's 35 million pounds of toxics use eliminated!
- Massachusetts industries have reduced their total EPA reportable toxic releases from 1988 to 1994 by 68% - That's 22 percentage points above the national average of 44%!
- Massachusetts industries show continued success year after year, with a 15% reduction in total EPA reportable toxic releases from 1993 to 1994 - That's nearly twice than the national average of 8.5!
- The 16 FY 1996 Governor's Awards Entries reduced chemical use by 2.3 million pounds, reduced waste by 5.7 million pounds, and reduced water use by 2 million gallons - That's real success!

Data confirm that Toxics Use Reduction is smart business strategy:

- The 16 FY 96 Governor's Awards entries saved over $4 million in reduced chemical purchases and over $1 million in reduced compliance costs.
- 24 of the OTA case studies document a combined total of more than $2.5 million in savings from reduced chemical use and waste generation.
- OTA conservatively estimates that OTA-assisted companies have realized over $20 million in savings from reducing their generation of hazardous waste by 10 million pounds.
- A 1996 study by the Environmental Business Council of New England of OTA-assisted companies, identified six companies that had not only achieved cost savings through TUR, but had also realized strategic benefits from their TUR investments, benefits which include enhanced product quality, new product development, competitive pricing, increased customer responsiveness, reduced time to market, and increased market share.

Data clearly indicate that TURA is a catalyst for Toxics Use Reduction success:
While the Council awaits the completion of the Program Evaluation to better document the causal relationship between TURA and the environmental and economic progress detailed

above, the following facts provide clear indication that TUR was the catalyst for progress highlighted above.

- EBC's Director reported to the Council that the strategic advantages realized by the 6 case studies would not have been identified in the absence of TURA and the TURA services provided.
- TURA planning requirements have paved the way for OTA and TUR Planners to introduce TQM and for some filers to get a jump start on ISO 14000 certification.

It is currently not possible to directly compare Massachusetts' industry's performance in terms of use and byproduct reduction with that of other states as a way of measuring the impact of TURA and the services of the TURA program, since other states do not gather similar use and byproduct data. However, recently released EPA data do provide some valuable insight. Massachusetts' industries not only performed well above the national average, they documented much greater reductions than industries in Connecticut, a state which is similar to Massachusetts in size and industrial development, offers an aggressive voluntary pollution prevention program, but does not require chemical use reporting and planning.

- Information recently released by Region 1 EPA, comparing TRI data (normalized for delisted chemicals and SICs) from Massachusetts and Connecticut, shows that while Connecticut has reduced total waste production from 1991 to 1994 by 12%, Massachusetts has cut total waste production by 27.6%. In addition, total waste generation in Connecticut increased last year while Massachusetts continued to show significant reductions.

In sum, Massachusetts has made significant environmental progress since the enactment of the TURA statute. Much evidence has been gathered to show that TUR saves money and can help companies identify strategic competitive advantages. There is also growing evidence to suggest that TURA was a catalyst for some of the environmental and economic success that Massachusetts has enjoyed. TURA has provided, will continue to provide, and will expand, the services Massachusetts needs to realize all the goals of the Toxics Use Reduction Act.

SUMMARY OF TURA SERVICES - The services provided by OTA, TURI and DEP are detailed in this report. Here are some highlights:

OTA:

- In FY 96, OTA teams of engineers made on-site visits to 289 facilities, bringing the total number of visits made to nearly 1,300. Data shows that TURA filers assisted by OTA have cut their waste to input ratio from 26% to 21% - reducing waste generation by 10 million pounds. Estimates also suggest that industries assisted by OTA (TURA filers and non-filers) have eliminated at least 26 million pounds of waste.

- OTA sponsored or co-sponsored 35 events in FY 1996, reaching a combined audience of more than 1,600. Over the life of the Office, OTA sponsored nearly 250 events, attracting more than 16,600 participants.
- OTA sponsored a workshop called "Regulations, Incentives, and the ISO's: Making the Connection" to compare TURA to ISO 9000 and 14000 and stress the overlap.
- OTA has published 32 case studies for use in marketing TUR as smart business.
- OTA expanded efforts to non-industrial populations, such as municipal officials.
- OTA visited two dozen schools and held workshops for school officials to focus on the link between chemical use and indoor air pollution.
- OTA helped DEP to design and launch the Massachusetts Printers Partnership.
- OTA, working with the Division of Energy Resources, has reaped nearly $1.3 million in grants to industry to implement innovative technology solutions which reduce waste and energy consumption.

TURI

- Since 1992, TURI has offered 25 Toxics Use Reduction Planner training classes to over 658 people.
- TURI has, with the help of the Science Advisory Board (SAB), provided recommendations to the Council on five more chemical substances this year.
- Four more Matching Grants were awarded to firms to pilot new TUR technologies in FY 1996, totaling 16 since the start of the program.
- 3 more Research Fellowship grants were awarded, bring the total to 27.
- Four students were placed in the summer inTURnship program to work on TUR projects in industry.
- The Technology Transfer Center added more than 1000 documents this year, bringing the total to over 16,000 publications; responded to 1,043 requests for information; and continued to operate and update "P2 Gems", which has been visited 1,010 times since its creation.
- The Northeast Business Environmental Network's Online site has received over 6,000 visits in four months.
- Working with the Department of Work Environment, TURI convened a graduate class in "Clean Production" and is planning a whole graduate program in pollution prevention and cleaner production.
- A new grant program was designed called "TURNetwork" (TURN) Grants to encourage non-government organizations to develop community-based training programs in TUR. Five projects were funded.

DEP

- DEP received, entered and QA/QC'd reports from 598 facilities, including over 2,400 forms, for calendar year 1994 reporting, and produced a TURA Data Release in January 1996, far in advance of TRI.

- 1,080 multi-media inspections were conducted which include a check for TURA compliance and on-site inspections were made at 149 TURA reporting facilities.
- 34 facilities were issued enforcement actions for TURA violation, including 6 which were cited for failure to file; 1994 TURA filers who failed to file in 1995 were contacted and 100 Notices of Noncompliance (NONs) were generated; and three TURA filers were referred to the Attorney General's Office.
- 525 people have been reviewed and certified as Toxics Use Reduction Planners and 230 have been recertified.
- Draft User Segment Regulations were promulgated.
- A Plan Update Guidance was developed with the help of OTA and TURI, as well as the 95 Reporting Guidance and Guidance for metals.
- DEP launched the Environmental Results Program (ERP) to redesign the way it regulates to focus more on performance as opposed to process.
- The first Phase of the Environmental Technology Initiative (ETI) began in FY 1996, to integrate cross training in pollution prevention.
- "One-Stop" Reporting Demonstration project was also begun in FY 96 to find ways to consolidate and streamline reporting.

ADMINISTRATIVE COUNCIL RECOMMENDATIONS TO PROMOTE TUR IN MASSACHUSETTS

To continue to build on the success of the TURA program, the Administrative Council offers the following recommendations.

- Continue to work with the Legislature to prevent the diversion of TURA funds and integrate the Cape Cod Community College job training program and the Merrimack College Microscale Technology Center into other TUR program efforts.
- Through data analysis and program evaluation efforts, improve the targeting of TUR program services.
- Provide the public with more comprehensive, easy to understand, data releases.
- Focus efforts on expanding the use of TURA data.
- Work with the TUR Advisory Board and its stakeholders to chart directions for the future growth of the TUR program.

THE ADMINISTRATIVE COUNCIL ON TOXICS USE REDUCTION

Fiscal Year 1996 Accomplishments

The Toxics Use Reduction Act (TURA) established the Administrative Council on Toxics Use Reduction as the coordinating body of the TUR program. In fiscal year 1996, the Council, chaired by Secretary Coxe, met every other month to publicly discuss program activities, to establish program policy, and to make determinations on the list of substances regulated under TURA. Highlights of the Council's fiscal year 1996 accomplishments are summarized below.

Progress Towards FY 1995 Recommendations to Promote TUR In Massachusetts

TURA Budget: The Council was again successful in working with the Legislature to prevent the diversion of funds from the TURA Program to 21E. In addition, work began with Cape Cod Community College, Mass Maritime Academy, and the University of Massachusetts to integrate the job training initiative funded through TURA fees, more closely into TURA program efforts. Working in collaboration with this consortium of Southeastern Massachusetts colleges, plans were developed and initiated to integrate TUR into the certificate programs at all three schools, development began of a TUR Internship certificate program for a possible fall offering, and a solicitation went out to TUR filers in the region to seek their interest in obtaining interns to assist them with TUR related projects. The Toxics Use Reduction Institute at the University of Massachusetts in Lowell also began work with the Microscale Technology Center at Merrimack College, also funded through TURA fees, and provided training and assistance in micro-scale techniques to the chemistry departments at the Lowell and Boston campuses of the University of Massachusetts.

"TURA Future's Day": The Council, along with the Advisory Board on Toxics Use Reduction, sponsored "TURA Future's Day" on February 13th. The meeting provided a wonderful opportunity for the various TURA stakeholders and program staff to celebrate how far the program has come and to acknowledge its many successes. The day also provided a unique forum to look towards the future of TUR and the TURA program, and to identify key directions to guide the program's growth. Small group discussion focused on the following areas:

- Integration of TUR into the culture of regulators and public agencies
- Increasing awareness of TUR in communities and the general public
- Integration of TUR into the culture of business
- Promotion of innovative P2 technology development as a method of increasing the competitiveness of Massachusetts' industry

The ideas generated during this session were used by TURA staff to direct FY 96 activities and to develop their FY 97 strategic plans.

Coordination and Implementation of the FY 1996 Overall Program Strategy: The Council, working through TURA agencies, and with the invaluable input of the Toxics Use Reduction Advisory Board and the Science Advisory Board, accomplished many of the tasks set out in the FY 96 strategy, as evidenced throughout this report. Highlights of Council efforts are summarized below.

- The hosting of a TURA Program-Wide workshop in September 1995 to provide an opportunity for staff from OTA, TURI and DEP to collaboratively set priorities for agency and interagency efforts, to target resources more effectively, to identify joint TUR projects, to develop a joint workplan and to enhance interagency communication.

- The development and passage of a TURA Integral Recycling Policy which clarifies how integral recycling is interpreted under the TURA to maximize companies' flexibility and to encourage on-site, in-process recycling.

- The promulgation of regulations to update the TUR List to keep it consistent with EPCRA and CERCLA, and to delist certain metal alloys and chromium III oxide after receiving input from TURI and its Science Advisory Board.

- Decisions to revise the regulations to delist hydroquinone and to deny a petition to delist sodium hydroxide.

- The temporarily stay of TURA reporting and planning requirements for radionuclides, pending a review of relevant Department of Public Health requirements.

- The submittal of comments on regulation and policies to encourage TUR, most notably those submitted in response to DEP's proposed amendments to regulations governing non-heat off-set lithographic printing presses, paint spray booths and cold cleaning solvent degreasers.

- The completion of a FY 1995 Annual Report and its submittal to the Legislature in accordance with TURA.

- The processing of TURA fee waiver requests for Secretary Coxe's review and approval.

- Continued efforts to promote the development and use of new environmental technologies through the Massachusetts Strategic Envirotechnology Partnership (STEP) to increase the competitiveness of Massachusetts' businesses.

- Increased efforts through the Program Evaluation being spearheaded by TURI and through increased data analysis by OTA and DEP, to measure the impact of the TUR Program on the use of toxics, the generation of toxic waste, and the bottomline/competitiveness of Massachusetts companies.

- Increased efforts to develop a process for state purchasing of environmentally preferred products, to move beyond recycled products and encourage purchase of non-toxic products.

THE ADMINISTRATIVE COUNCIL ON TOXICS USE REDUCTION

Fiscal Year 1997 Strategic Plan

In fiscal year 1997, the Administrative Council will continue to coordinate the implementation of the TUR program, to address the many goals of the statute through each agency's workplans as described below in this report. Major areas of Council interest in FY 97 are summarized below.

Program Evaluation

The Council will focus much of its attention on the effort spearheaded by TURI to comprehensively evaluate industry progress in reducing the use of toxic chemicals and generation of toxic waste, and to quantify the impact that TURA and the three TUR agencies have had on TUR success.

Targeting TUR Program Services

For the first time, user segments are expected to be established by DEP regulation in the fall/winter of FY 1997. These user segments will allow the program to analyze data more effectively and to compare segments of the TUR reporting universe comprised of firms which produce similar products using similar processes. This type of detailed comparative analysis will allow us to identify areas where progress is lagging and where TURA services may be most effective.

The Council will also continue to address any concerns that specific industries, industry trade associations or TUR Planners raise with respect to the appropriateness and usefulness of specific planning requirements, the content and format of reporting and planning forms, and the substances regulated under the Act.

Improving TURA Data Analysis and the Annual Data Release

Because the TURA universe has changed each year with the addition and subtraction of chemicals, SIC codes and individual companies, data analysis is a complex task, and the clear communication of the data analysis results often presents an even more difficult challenge. Over the past few years, the program has found itself responding to data analysis conducted by industry trade associations and environmental organizations, rather than proactively analyzing data and releasing reports to address stakeholder questions and concerns accurately and comprehensively. In FY 97, the Council will work with the three agencies to more rigorously analyze the TURA data gathered since 1990 so that the program can provide the public with a more comprehensive and more understandable picture of the progress achieved and the challenges ahead.

Expanding the Use of TURA Data and TUR Techniques

TURA data can be used by companies to help identify opportunities to save money, gain strategic competitive advantage, and prepare for ISO 14000 and other initiatives that focus on improved environmental management. TURA data can be used by communities to better understand and work with their industries and by municipalities to help educate and train their emergency response personnel. TURA data can be used by consumers to inform their purchases, to help eliminate the overuse of toxics and to minimize the generation of household hazardous waste. TURA data can be used by state agencies to help them identify opportunities for cost savings and to inform state purchasing. TURA data can help regulators meet and exceed performance goals in ways that actually save the regulated community money. TURA data can help universities identify areas where research is needed and help entrepreneurs identify potential markets for new technologies. Fiscal year 1997 will mark the broad expansion of TURA efforts, through a variety of initiatives detailed in the agency FY 97 strategies, to more effectively communicate with industry to promote TUR as a sound business strategy, and to reach out to communities, municipalities, consumers, state agencies, regulators, universities and entrepreneurs.

TURA - The Next Generation

The Council will work with the TUR Advisory Board and its stakeholder groups to help define directions for the future growth of the TURA program.

THE TOXICS USE REDUCTION ADVISORY BOARD

Fiscal Year 1996 Accomplishments

The TUR Advisory Board was created by the Toxics Use Reduction Act to advise the Council on TUR policy issues, to provide an open forum for discussion of TUR matters, to establish ad hoc committees when necessary to study and formulate recommendations, and to establish an annual Governor's TUR Awards Program to recognize outstanding individual and organizational achievement in TUR. Throughout FY 1996, the TUR Advisory Board, chaired by Sue Swedis, met every other month to provide essential comment and direction to the Council and the TURA agencies. Highlights of the Board's fiscal year 1996 accomplishments are summarized below.

User Segment Committee: The user segment committee, chaired by Gary Siegel, completed the work it began in FY 95, with the finalization of DEP draft TURA user segment regulations. These draft regulations, propose criteria for the establishment of user segments as well as identify an initial list of 18 user segments which DEP will add to in the coming years of the Program. Finalization of user segment regulations is anticipated in FY 97, after public comment has been solicited and considered.

Form S Committee: The Form S Committee, chaired by Tim Hawes, assisted DEP in the development of a Plan Update Summary and Guidance Document that was sent to the regulated community.

Governor's Awards Committee: The Governor's Award Committee, chaired by Gretchen Latowsky, honored GTE Government Systems, The Robbins Company, the MWRA/MASCO Hospital Mercury Work Group c/o MASCO and the three TURA Agencies (OTA, TURI and DEP) for outstanding achievement in TUR. Governor William Weld, at a luncheon ceremony on May 15th, presented the awards and also recognized the following five companies who opened their doors to showcase their exemplary achievements in toxics use reduction through the Cleaner Technology Demonstration Program: Cranston Print Works, Danaher Tool Group, Lockheed Matin Defense Systems, Metallized Products, Inc., and Utopia Cleaners.

Summary of Savings from the 16 FY 1996 TUR Governor's Award Entries

- 2,289,257 pounds in reduced toxics chemical use
- 5,671,075 pounds in reduced waste generation
- 2,000,000 gallons in reduced water use
- $4,022,020 saved in reduced chemical purchases
- $1,101,524 saved in reduced costs for compliance fees, etc.

Program Evaluation Multi-Stakeholder Group: The Advisory Board, through Kevin McManus, continued to participate in the TURA Program-wide evaluation effort.

TUR Advisory Board
Fiscal Year 1997 Strategic Plan

In fiscal year 1996, the TUR Advisory Board meetings generated a great deal of positive discussion on the success of the Toxics Use Reduction Program as well as some clear acknowledgement among members that we must be increasingly diligent in efforts to keep TURA relevant, credible and a catalyst for positive environmental management and sound economic progress. As a result, the TUR Advisory Board has decided to devote much of its efforts in the upcoming fiscal year towards addressing two crucial questions:

- What do we want TURA to look like in five years? and
- How do we get there from here?

To that end, the Board has scheduled monthly meetings beginning in November 1996 and ending in April 1997, which will be dedicated almost exclusively to the development of a new vision for TURA - one that is informed by the lessons of the past and looks ahead to address the challenges of tomorrow.

The Board will work with its many stakeholders and monitor the results of the TURA program-wide evaluation effort to produce a new vision in FY 97: TURA - The Next Generation.

OFFICE OF TECHNICAL ASSISTANCE FOR TOXICS USE REDUCTION (OTA)

Fiscal Year 1996 Accomplishments

The Office of Technical Assistance was created by the Toxics Use Reduction Act to "provide technical assistance to toxics users and small quantity toxics users to assist them in achieving toxics use reduction". After six years in operation, the Office of Technical Assistance -- along with the entire TURA program -- has earned a reputation for the depth and breadth of its experience in promoting toxics use reduction as an environmentally important and financially rewarding practice for businesses. This year, OTA's efforts have received recognition both nationally and from the Commonwealth.

- Two staff members were appointed by the U.S. EPA to national committees that are part of the Common Sense Initiative, a federal initiative to develop consensus on how to improve regulatory programs for several industry sectors.

- OTA was recognized at a special ceremony in Washington, D.C. by the Department of Energy for the high quality and large number of annual proposals submitted with Massachusetts firms for National Industrial Competitiveness through Energy, Environment and Economics (NICE3) grants. OTA-sponsored proposals have reaped awards of nearly $1.3 million in NICE3 funds for Massachusetts companies.

- A panel of representatives from the state government, the business community, labor, community groups, academia, and the media selected the staff of OTA as one of 10 recipients of the Manuel Carballo Governor's Award for Excellence in Public Service, the highest honor bestowed on employees of the Commonwealth "who personify excellence in public service."

These honors and recognitions underscore the solid credibility OTA has established in its core efforts as a nonregulatory assistance agency. Over the years, OTA has matured in its mission and direction, and taken on a variety of other programs and projects to fulfill its mandate under the law. Highlights of OTA's FY 96 accomplishments are summarized below.

Promoting TUR as an Important Business Strategy

A 1996 study by the Environmental Business Council of New England (EBC) of companies served by OTA found that companies where costs savings had been achieved had also realized strategic benefits from their investments in TUR efforts. These benefits included enhanced product quality, new product development, competitive pricing, increased customer responsiveness, reduced time to market, and increased market share. EBC found that these competitive advantages were, by and large, not recognized by company management as the result of TUR, until the study's authors focused attention on the subject. As a result, the business advantages of TUR are acknowledged and understood only by environmental health and safety officers or other employees directly involved in production processes and compliance.

To highlight the importance of TUR as a business strategy, OTA sought to increase the focus of its work in FY 96 on making the connection between TUR activities and the overall business health of organizations through the following initiatives:

- In early June 1996, OTA and the American Society for Quality Control took the lead in organizing a workshop called "Regulations, Incentives, and the ISOs: Making the Connections." With presentations from industry, government and consultants, the workshop compared TURA and ISO 9000 and ISO 14000, stressing the overlap in desired outcomes, especially those related to quality and competitive advantage. More than 130 people attended, 75 percent of whom represented business and industry. Other co-sponsors of the workshop included the Massachusetts Manufacturing Partnership (MMP), Bay State Skills Corp. (BSSC), Associated Industries of Massachusetts (AIM), the Northeast Business Environmental Network (NBEN), TURI and DEP.

- During the course of FY 96, OTA published eight more case studies for use in marketing TUR as smart business operations to industry. A list of the new case studies can be found in Attachment B.

Collaborative Projects

- OTA assisted in the design and implementation of the ground-breaking Massachusetts Printers' Partnership, a DEP initiative with the Printing Industries of New England to put in place a new regulatory mechanism for an industry sector. OTA also organized statewide workshops and clinics for potential members of the partnership. The program has gained national recognition and is viewed by EPA Region I, other trade associations, and many policy-makers as an example of how "common sense" regulation might be achieved.

- For two years, OTA has played a major role in the Mercury Workgroup organized by the MWRA which includes a group of 28 hospitals in the Greater Boston area. The purpose of the Workgroup is to assist in reducing or eliminating the use of mercury and thereby reduce the loadings to the MWRA system. Phase 1 of the project has identified the problems and created a database of all sources of mercury. Phase 2 will use the data collected and focus on corrective action, including the writing of procedures and a management handbook for hospitals as well as bench testing of a number of mercury removal technologies. OTA staff is chair of one subcommittee and is playing a key role in writing the source reduction and pollution prevention sections of the management handbook. In addition, OTA staff will be involved in the assistance provided by STEP to MWRA in designing the bench testing program, and also will be involved in the subsequent pilot testing of selected technologies.

- During the first year of "Better, Faster, Cheaper and Cleaner Manufacturing in Massachusetts," OTA staff participated in joint training for all agencies involved and also increased referrals and collaborative work with the regional affiliates of the Massachusetts Manufacturing Partnership (MMP). DEP and TURI in addition to MMP are collaborating on this effort to coordinate services and help industry understand the competitive advantages associated with TUR and improved environmental performance.

- The highly successful collaboration with American Society for Quality Control on "Regulations, Incentives and ISOs," (mentioned above) stems from OTA's involvement in the organization. As an active member of ASQC, one of OTA's Toxics Use Reduction engineers argued for many years that the organization should officially recognize the connection between pollution prevention/toxic use reduction and quality issues, leading to the establishment of an ASQC national pollution prevention subcommittee as part of the Energy and Environment Committee. OTA's engineer chairs both this subcommittee and the Boston Pollution Prevention group which serves as a model for the other 250 local sections of ASQC.

- OTA staff helped to lay the groundwork for a collaborative effort between the TURA program and a consortium of UMass Dartmouth, Cape Cod Community College and the Massachusetts Maritime Academy. This joint effort resulted in planning for a TUR Internship program in southeastern Massachusetts initiated in FY 97 and plans for incorporation of TUR into the environmental science certificate programs at all three schools.

General TUR Outreach

- OTA continued to use workshops and conferences to reach a broad audience in delivering the message about the benefits of TUR, either through focusing on specific technologies (such as the "Coatings for the Environment: The UV Cure") or general topics of interest (such as "Water Conservation and TUR"). Altogether in FY '96, OTA sponsored or co-sponsored 35 events, reaching a combined audience of more than 1,600. (See the appendix for a complete listing of events.) Over the life of the Office, OTA has sponsored nearly 250 events, attracting more than 16,600 participants.

- Staff expanded efforts to promote pollution prevention concepts to non-industrial populations, working with and presenting to municipal officials such as fire chiefs, health agents, local emergency planning committees, wastewater officials, mayoral offices, economic development committees, and regional planning agencies. Based on a well-received and successful presentation to newly appointed municipal fire chiefs, OTA was asked to do annual toxics use reduction training for new fire chiefs. OTA staff met with business officials in chambers of commerce, trade associations, and other groups, and worked to promote the organization of business groups to focus on pollution prevention.

- OTA published a series of four fact sheets for consumers on waste prevention and management for pesticide use, paint, and automotive waste generated by "do-it-yourselfers."

- OTA provided on-site assistance in schools, focusing on the link between chemical use and indoor air pollution. OTA, supported by a federal demonstration grant, visited over two dozen schools and held workshops for school officials to promote awareness of chemical use reduction opportunities, and common sense methods of addressing indoor air quality problems.

- Continuing its work under an OTA federal grant for interagency collaborative efforts as part of the Clean State Program, OTA staff assisted the Executive Office of Environmental Affairs in developing and conducting workshops for agency officials on environmental compliance and practicable pollution prevention. Through OTA's work, the Department of Procurement and General Services has greatly increased efforts to promote the purchasing of environmentally friendly products.

Policy Development

OTA worked on the national, state and local levels to promote the incorporation of the prevention ethic into the policies, rules, and procedures of environmental governance. At the invitation of EPA, OTA staff served as members of EPA's national Common Sense Initiative, whose purpose is to redesign environmental rules. OTA staff also generated comments on proposals for greater use of TSCA data. Staff assisted in the development of TURA rules concerning recycling, have submitted recommendations to DEP and EPA of ways to ensure that regulations covering volatile organic chemical emissions to air encourage switches to less-toxic processes, and assisted in the development of universal waste rules. Staff have participated in the state's Hazardous Waste Advisory Committee rule review group, and in the national Forum on State, Tribal and Territorial Agencies.

OTA's work on policy issues included:

- Assisting DEP in the development of user segment policies, the 1995 Reporting Guidance and the Toxics Use Reduction Act Plan Update Guidance;

- Assisting the Executive Office of Environmental Affairs in the development of its Household Hazardous Product policy;

- Assisting in development of policies implemented by the STEP and NETI programs;

- Participating in the development of responses to TURA delisting petitions;

- Providing comments on EPA's enforcement policies, illustrating how they might interface effectively with assistance activities;

- Participating in the development of the TURA Integral Recycling Policy;

- Assisting the Administrative Council in decisions relative to chemical delistings;

- Participation of OTA staff in EPA's Common Sense Initiative, as chair of a workgroup in the computer and electronics sector, and as a member of the printing sector workgroup in recognition of the success of the above mentioned Massachusetts Printer's Partnership. In this capacity, OTA staff initiated proposals that resulted in:
    - EPA's establishment of an Enhanced Public Access Task Force, which has been formed for the purpose of streamlining and publicizing EPA policies and rules;
    - Plans for a national conference in February 1997 on Electronic Product Recovery and Recycling (EPR2); and
    - Consideration of the Massachusetts Printers' Partnership as the model for national application.

- OTA staff developed and conducted pollution prevention training for permit writers on how to include pollution prevention in permitting. They reviewed hundreds of permits and selected examples of provisions that illustrated what can be done under current law. Their training was provided to enforcement officials from all of New England and their insights were summarized in an article published in *Pollution Prevention Review*.

- OTA has provided consultation and made presentations to the EPA and other agencies on how to establish, operate, and evaluate the performance of assistance activities. Highlights include:
    - OTA staff made presentations and moderated sessions for an audience of federal and state pollution prevention professionals at conferences organized by the National Pollution Prevention Roundtable in Miami and Washington, D.C.
    - OTA staff presentation at the request of the Northeast Waste Management Officials Association, to all other pollution prevention program staff in the region on how OTA conducts technical assistance for pollution prevention.
    - Regular consultation with EPA's Region I on the establishment of their CLEAN, Startrack, Environmental Leadership, self-reporting policy, and other efforts classed as "regulatory reinvention". The President's XL program, set up to waive regulatory requirements that stand in the way of beneficial environmental activities, has included a company using a recycling system recommended by OTA.

- To integrate TUR principles into other programs and policies, OTA has facilitated cooperation among various other assistance agencies, and has held meetings with several relevant groups and provided opportunities for them to present at public events. Liaisons have been established and meetings have been held with the Division of Occupational Hygiene, the Division of Energy Resources, the Industrial Services Program, the Massachusetts Manufacturing Partnership, the Small Business Development Centers, WasteCap of Massachusetts, the New England Environmental Assistance Team, among others, as well as with enforcement agencies at local, state and national levels.

- The New England Environmental Expo asked OTA to organize a workshop at its 1996 Spring Exposition as a follow up to the highly successful Regulatory Improvement Opportunities Forum (RIO) held in April 1995 in which OTA played a major role. OTA collaborated with the Northeast Business Environmental Network (NBEN) to host a colloquium featuring all the chief environmental officials of the Northeast, and prepared questions concerning ways to improve regulations.

Technology Transfer and Identifying Innovative Technologies

- Working with the RadTech Foundation, OTA in May 1996 sponsored a one-day conference called "Coatings for the Environment: The UV Cure" which explained the advantages of ultraviolet(UV) curing for coated and printed materials. The conference provided an overview of how the technology works, its economics, and how its use can dramatically reduce air pollution and improve health and safety in the workplace. The technology has applications in a number of printing and coating operations. Several Massachusetts companies are considering or have adopted UV technology since the conference. Of the 122 workshop attendees, more than two-thirds represented potential users of these environmentally-friendly technologies.

- OTA's continued collaboration with the Division of Energy Resources (DOER) in identifying candidate companies and assisting with proposals for the National Industrial Competitiveness through Energy, Environment and Economics (NICE3) program paid off handsomely in 1996. Two Massachusetts companies -- Brittany Dyeing and Printing Corp. of New Bedford and ThermoTrex of Waltham -- were awarded grants from the federal program, each for the maximum amount of $425,000. The two Massachusetts firms were among only 17 such grants given out nationwide. In addition, representatives from OTA and DOER received a Management and Communications Award from the U.S. Department of Energy in recognition of the high quality and large number of annual NICE3 proposals submitted by Massachusetts firms. Meanwhile, OTA continued to serve as the technical supervisor of a 1994 NICE3 grant (the Commonwealth's first) awarded to Erving Paper Company of Erving.

- OTA staff developed two additional software programs this year to assist firms with tracking chemical usage and costs and to facilitate daily and monthly recordkeeping for coating usage in spray booths. This information is valuable both in quantifying potential TUR savings as well as keeping records for compliance purposes. Previously, staff had developed software to analyze coating formulations as applied and a spreadsheet for use with degreasers which calculates average monthly solvent use in gallons for permit exemption and complaince purposes and MACT for Alternative Standards. These software programs are available without charge to Massachusetts companies.

- OTA staff continued to provide technical review and assessment of emerging environmental technologies, and to increase participation in the pilot demonstrations of technologies receiving Strategic Envirotechnology Partnership (STEP) assistance.

- OTA has worked closely with industry, as well as EOEA and TURI staff, to identify industrial problems that require research or technology development. OTA provided a list of possible research topics to TURI and to the National Envirotechnology for Waste Prevention Institute(NETI) at the University of Massachusetts Amherst. This year greater emphasis was placed on trying to match possible projects with the researchers' areas of interest and this resulted in five proposals based on OTA's suggestions being submitted to NETI for consideration. One of the nine projects funded by NETI is based on a research topic submitted by OTA.

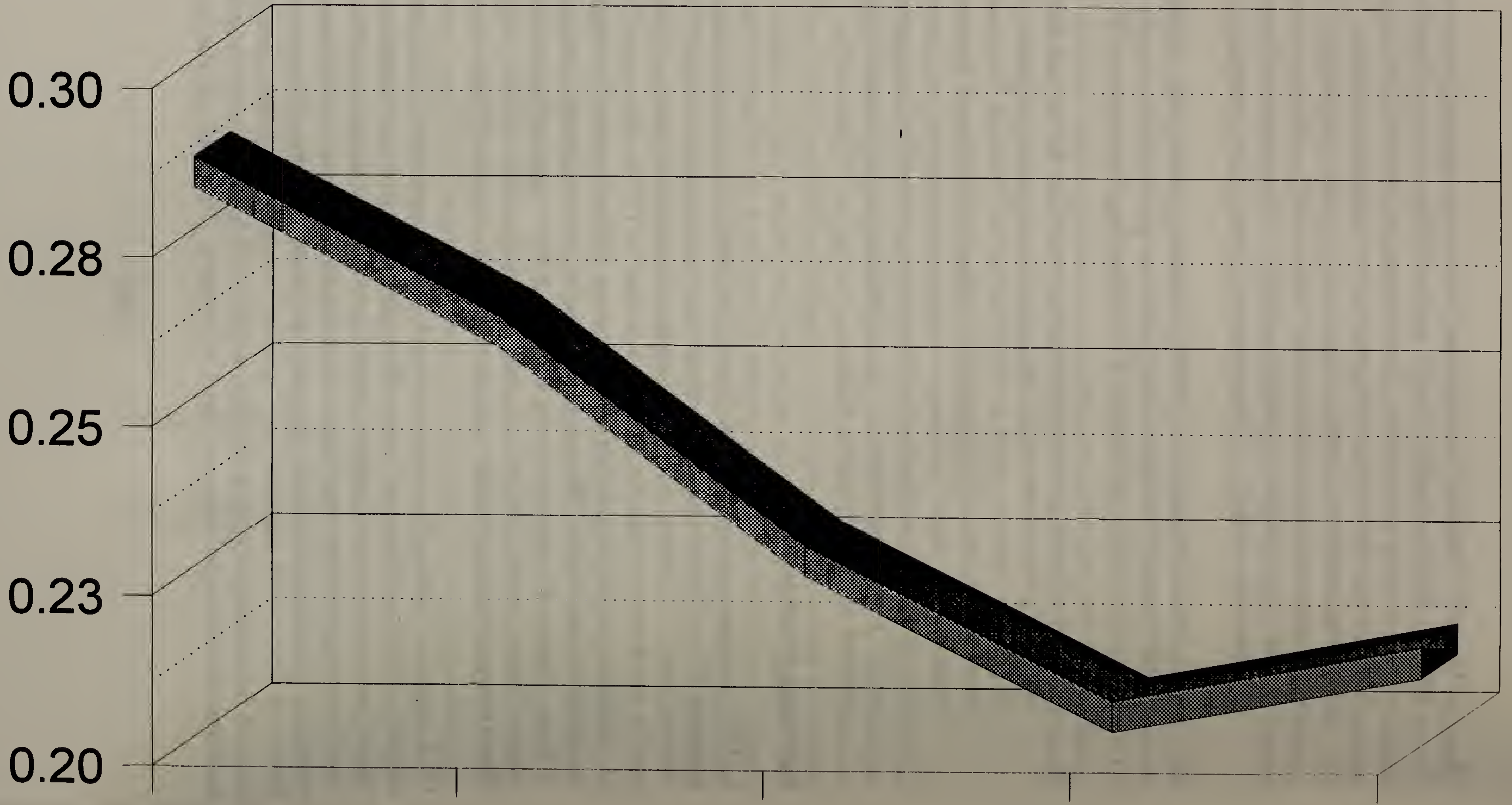
Measuring Effectiveness

In 1990, companies covered by the Toxics Use Reduction Act with whom OTA has worked generated 45.4 million pounds of byproduct (waste) as a result of using 174.6 million pounds of chemical input. This meant that 26% of chemicals used became waste. In 1994 (the most recent year for which data is available), companies covered by TURA with whom OTA had worked used 211.5 million pounds of chemicals (several sources indicate increased economic activity). If they had generated waste at the 1990 rate, this amount of use would have resulted in 55 million pounds of waste. Instead, the companies with which OTA has worked generated a total of 44.8 million pounds of waste, cutting their ratio of waste to input from 26% to 21%. By this measure, OTA helped reduce more than 10 million pounds of pollution from the TURA-covered population alone.

OTA, however, works with many companies that are not covered by TURA. Attempts to measure success are under development by the office. Because information about avoided pollution and related costs is not often tracked and recorded by companies, it has been difficult to insert OTA's need for accountability into the program of assistance. However, each OTA team now uses newly developed spreadsheets for establishing baseline measures of chemical use, and conducts regular follow-up checks with each company assisted. In addition, OTA is working on developing methods for costs and savings estimation, so that it will be possible to extrapolate with increased confidence from reported usage and waste information. OTA staff will also be making increased

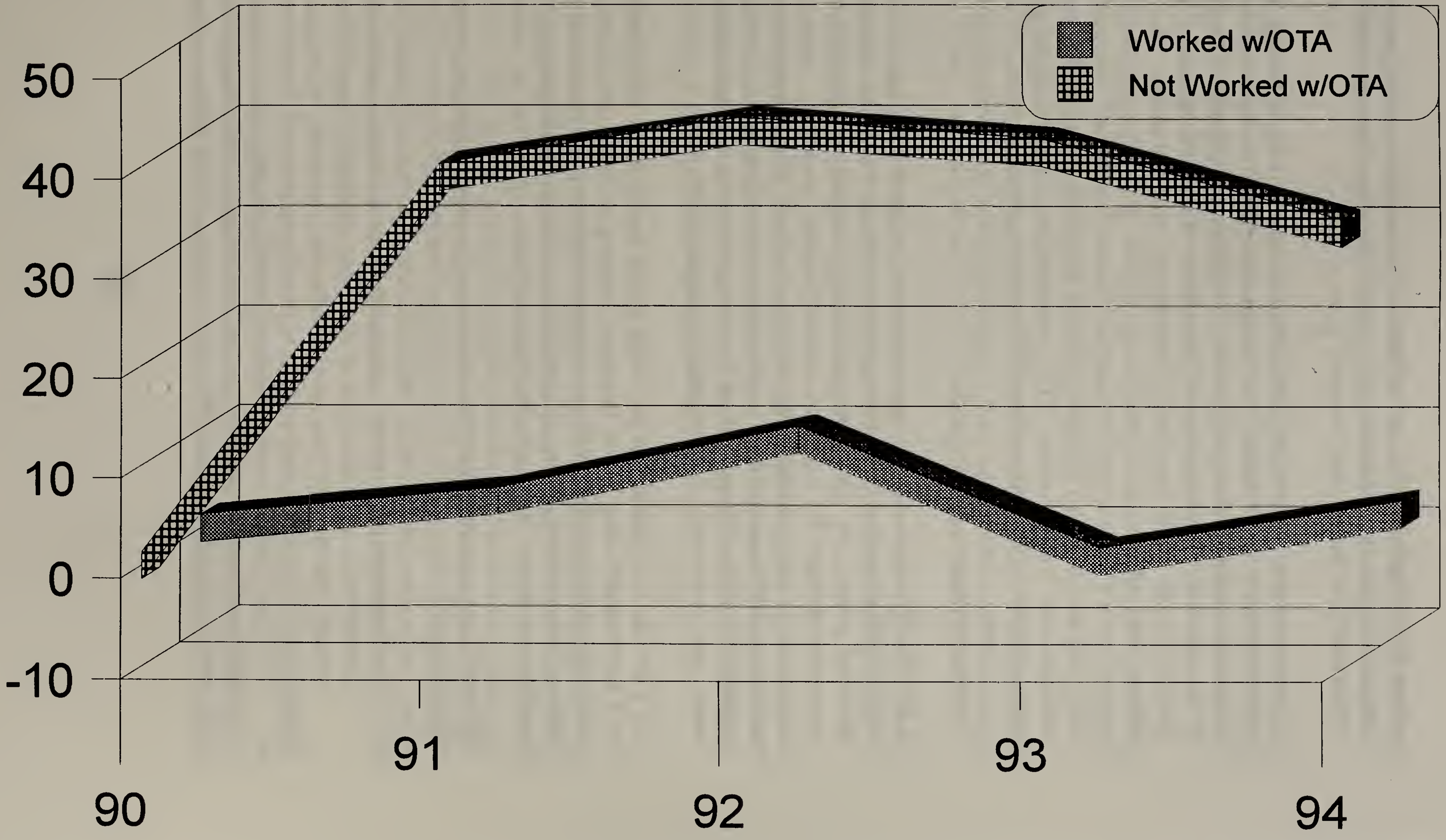
Ratio of byproduct / Usage

Companies that have worked with OTA



% Change Byproduct from 90

TURA Data



efforts to document other benefits of pollution prevention, including improved competitiveness, retained jobs, enhanced productivity, increased compliance, and workplace safety - items about which each team has regularly reported gains.

Using two of OTA's early pilot evaluations of companies implementing TUR, it is possible to provide a conservative estimate of the overall effect of OTA's assistance on the entire population of companies visited. If only 50% of the TUR options identified by OTA have been implemented by the companies visited - a rate well below that identified in evaluations - more than 26 million pounds of waste would have been eliminated and over $20 million would have been saved in disposal costs alone.

OTA staff worked with TURI and DEP staff on overall program effectiveness, assisting in the development of study protocols. OTA's engineers have assisted with the generation of data, and have performed substantial work in checking data quality.

Technical Assistance to Companies

In FY 96, OTA teams of engineers made on-site visits to 289 facilities, bringing the total number of visits made to nearly 1,300. As in all previous years, the largest industry sector assisted was fabricated metals. For the fourth year running, virtually every industrial classification was represented amongst the companies served; printing, electronics, chemical, paper, food, and machine shops were the industries most often visited. Referrals from enforcement agencies, particularly DEP, continued to supply OTA staff with companies willing to try toxics use reduction as a strategy for compliance, but the percentage of requests for help originating by other means, such as outreach, was comparatively higher in FY 96.

In FY 94, the most recent year for which data is available, 23 additional companies receiving OTA help dropped below TURA thresholds, bringing the total to 60 since the program began. In addition, many companies receiving assistance were able to drop below air and/or water permit levels, allowing them to achieve restricted emissions status on air operating permits or go beyond compliance with local wastewater discharge limits.

OTA staff recommended many different techniques to reduce pollution at the companies they visit. Some examples:

- A metal-bending company switched from a petroleum-based lubricant to a nontoxic product that is now filtered out of washwater, enabling the reuse of the process water. As a result, the company has ceased all industrial wastewater discharges.

- OTA staff showed a metal fabricator how eliminating solvent-based paints would also eliminate need for the use of solvents in cleanup. Both changes substantially reduced volatile organic chemical (VOC) air emissions. OTA engineers found a nontoxic antispattering compound that could be used for welding, again eliminating not just the need for a solvent-based product but also the further use of solvents for cleaning the compound off the product.

- OTA staff helped a consumer product company dramatically reduce container breakage and improve fill control on a bottling line, improving yield and reducing hazardous waste generation. For this same company, OTA also found a steam cleaning process that could be used for process vessels, eliminating the need for toxic tank cleaners.

- Staff engineers assisted a company referred by a sewage treatment authority in installing an ion-exchange unit. This change reduced emissions to below the heavy metal discharge limits.

- OTA's RUN VOC software, which calculates VOC emissions per gallon of usage, enabled many companies to select lower polluting products. One company, after cutting its toxic air emissions in half, used the program at several other out-of-state facilities.

- Because of OTA's advice, a company was able to replace chrome plating with powder coating, expanding operations in the state and cutting process expenses, as well as substituting a relatively benign process for chrome plating.

In addition, OTA assisted many small and new companies in understanding the requirements of environmental rules, such as curtailing improper hazardous waste disposal and uncontrolled air emissions. These small companies are often unaware of what is required, and do not typically have the staff or resources to provide the necessary guidance.

General TUR Outreach

- After completion of its work on the federally sponsored Buzzards Bay Project, OTA continued to target site visits in the Buzzards Bay region, assisting CZM staff in planning TUR workshops, and arranging company tours for the Secretary and the Governor. In addition, OTA's work on this project led to the identification of Brittany Dying and Printing Corporation of New Bedford as a candidate for the NICE3 program. With the assistance of OTA and DOER, Brittany was successful in its application for a $425,000 federal grant to develop an innovative textile finishing technology that will double current equipment speeds as well as reduce waste and energy consumption and provide costs savings.

- OTA staff continued to be active participants in all phases and levels of the Massachusetts Watershed Initiative. OTA efforts include:
    - Technical staff participation on all of the active EOEA Basin Teams and recent appointment of OTA staff as co-leaders of the EOEA Basin Team for the Ten Mile

River. As part of this program, OTA staff serve as Basin Team liaisons to POTWs in each watershed and provide outreach and technical assistance to businesses.

  - The OTA Director's participation in weekly meetings between the Secretary and senior EOEA staff to discuss the progress and major issues concerning the Initiative, and set policy direction.
  - OTA representation on the Watershed Initiative Steering Committee appointed by the Governor which advises the Secretary on policy and implementation of the Initiative.

- OTA continued to write monthly columns for publication in Manufacturers' Mart, a monthly trade newspaper distributed to manufacturers throughout New England. Some of the topics of the column included: OTA's software programs for calculating coating emissions; brief, but detailed, examples of how Massachusetts companies eliminated the use of sulfuric acid in wastewater treatment operations; the environmental and economic benefits of ultra violet curing technologies; and the connection between TURA planning and preparation for certification of ISO 9000 or 14000.

OTA
Fiscal Year 1997 Strategic Plan

The Office of Technical Assistance has identified seven major goals for Fiscal Year 1997.

1. **To market TUR as a tool for competitive advantage and strengthen integration of TUR in industry**

Through Outreach Partnerships:

In marketing materials and presentations, emphasize TUR as a tool for competitive advantages, using case studies (such as Fit To Print) as examples.

Develop new relationships and strengthen existing relationship with trade associations, professional societies and other key organizations, such as financial institutions, to improve the integration of TUR in business decisions. For example: Electronic Data Interchange (EDI) and P2 workshops, in collaboration with the Electronic Commerce Resource Center, Scranton, PA; and the ISO/TURA Connection workshop series in collaboration with American Society for Quality Control (ASQC) and several other agencies.

Target increased dissemination of information on toxics use reduction and its competitive advantage benefits to priority sectors based on analysis of TUR data.

Work specifically with the Toxics Use Reduction Planners Association (TURPA) to develop workshops and provide information of value and general support to TURPs; and develop specific events for recertification.

Continue to coordinate with other agencies/assistance resources including the Industrial Services Program, the Massachusetts Manufacturing Partnership, the DEP Customer Service Centers, and the New England Environmental Assistance Team.

Continue joint work with TURI on cleaning projects, conferences, research and other outreach projects. For example: "Mr. Clean" workshops and the Cleaner Technologies Demonstration Site program.

Through Targeted Projects:

Continue to look for opportunities to sponsor events for targeted sectors or processes, or that advance transfer of TUR technologies. For example: Workshop on available alternatives for cleaning with solvents scheduled for February 1997.

Continue EPA-funded Autobody shops and Printed Wire Boards projects to coordinate production of manuals and workshops that explain a simplified compliance track incorporating TUR. Continue to collaborate with EPA-New England, DEP, the state's Attorney General's office, and others.

Provide three or four downlink sites across the Commonwealth for national teleconference on new regulations affecting woodfinishers under the Clean Air Act Amendments.

Continue work with dry cleaners through EPA-funded project working with trade associations to do outreach and training on TUR and compliance.

Continue work with DEP on the Massachusetts Printers' Partnership.

As pointed out by the Environmental Business Council's recent study, information about completed TUR projects that provide strategic business advantages is extremely difficult to obtain. In order to more effectively establish the link between process changes for TUR and the enhancement of business productivity and competitiveness, OTA will explore methods of implementing EBC's recommendation to conduct training on the identification of strategic benefits, and disseminate this kind of information.

Through Increased Financial Assessment of TUR:

Develop and implement an outreach program specifically to CEOs and CFOs on TUR, emphasizing the long-term financial and competitive advantage benefits.

Provide one-on-one assistance to companies as well as workshops on accounting for TUR in company budgets; how to measure costs vs. benefits, where "hidden" benefits might occur, etc.

Develop a protocol for estimating cost savings from reductions in chemical use and/or waste when company documentation of cost savings has not occurred. The protocol will be piloted with a number of companies to verify assumptions and, if found accurate, will be used by the office and may be made available for use by others.

Review requests for waivers of TURA fees and advise the Secretary.

Establish relationships with the insurance industry and explore potential for reduced liability costs in the form of insurance premiums. Participate in other efforts (such as EPA's) to work with the insurance industry on this issue. If possible, OTA will seek to fill in gaps in data needed by actuarial analysts.

Continue work with NEWMOA on financial evaluations of TUR. OTA will continue its outreach and financial assistance in this area, targeting banks and other financial institutions who might be able to influence the availability of capital for TUR projects.

Through An Expanded Outreach Program:

Develop new marketing and outreach program that devises a simple, clear message about OTA and TUR that is used consistently in all outreach efforts.

Continue to look for new opportunities for outreach to toxics users through technology-specific workshops; on-line information, including establishing TUR "news groups"; making publications available electronically; greater involvement in trade groups and professional societies; and increased use of e-mail to provide information to companies.

2. To Broaden the Constituency for TUR Among Non-Industrial Sectors

Establish, and seek the advice of, a network of key professionals, organizations, experts and others who understand the needs, concerns and make up of municipalities, schools, state facilities, consumers and other non-industrial groups who represent the broad constituency for TUR.

Increase outreach efforts on TUR to municipalities, encouraging them to promote TUR to local industry and co-sponsor TUR workshop. For example: “Cleaner Communities: A Workshop for Businesses and Municipal Officials,” in collaboration with the cities of Holyoke, Chicopee and Springfield.

Work with Local Emergency Planning Councils (LEPCs) to incorporate TUR into planning and outreach work with local industries.

Increase specific outreach efforts to schools, households, and the non-industrial sectors in cooperation with other EOEA agency programs.

Continue working on the "Clean State" initiative, providing training and assistance to other state agencies.

Work with EOEA Watershed Basin Teams and watershed associations and groups to build a constituency for TUR as part of broad environmental protection programs.

3. To Identify Opportunities for, and Support Development of, Innovative TUR Technologies

Identify needs for technical research and make recommendations to STEP, including the

National Waste Prevention and Environmental Technology Institute (NETI).

Continuing to review proposals for STEP and provide technical consultation as necessary.

Continuing to identify and support Massachusetts companies as applicants to the National Industrial Competitiveness through Energy, Environment and Economy (NICE3) grant program.

Continue to provide administrative services and overall project oversight for the three NICE3-funded project currently underway in the Commonwealth.

4. To Continue to Evaluate OTA's Effectiveness and Analyze TURA Data in the Context of:

Progress Toward TURA Goals

Work with TURI and DEP to: develop "plain language" presentation of TURA data that clearly communicates the effectiveness of TUR in both environmental and economic terms by keeping the TURA message simple, clear and consistent; improve facility baseline data gathering to refine the assessment of effectiveness of OTA; and continue work on the overall TURA program evaluation.

Specific Safety, Health and Environmental Concerns

Identify specific chemicals of concern, analyze use patterns, identify possible alternatives, provide relevant information to other TURA program staff and to the media and the general public; and continue to contribute to the discussion about delisting petitions and policy decisions regarding selected chemicals of concern.

5. To Continue to Provide Technical Assistance and Compliance Assistance to TUR filers and Other Toxic Users Upon Request

Continue to provide on-site, confidential technical assistance to companies who request it, giving priority to companies referred by enforcement agencies.

Target companies for assistance based on consultation with POTWs; priorities in a particular watershed identified during work with EOEA Basin Teams; specific sectors identified in analysis of TURA data; sectors that could benefit from particular innovative technologies; and sectors particularly in need of compliance assistance because of new or changing regulations.

Develop workshops or conferences, either industry or technology specific, on topics identified during assistance visits and TUR research; find appropriate co-sponsors, such as trade associations, professional societies, etc. For example: "Grease Reduction Workshop" in collaboration with the Newburyport Sewage Treatment Facility; One Step Emergency Planning, in collaboration with EPA-New England; and seminars and a manual on alternative industrial cleaning techniques.

Continue to provide annual Compliance Assistance workshops and clinics on requirements of TURA and other major regulations with a widespread affect on various sectors (e.g. Clean Air Act Amendments).

Provide an important link between a public policy agenda and private sector actions through OTA site visit activities. OTA's field work emphasizes changes in behavior and attitudes at all levels of a facility, asking companies to consider first and foremost how they can solve environmental problems and improve their competitive advantage by changing standard operating procedures ranging from use and process technology to day-to-day worker habits on the shop floor. OTA's impartial identification of opportunities for improved performance leads to companies' improved understanding of their options and raises their comfort level and efficiency in working with environmental consultants.

6. To Integrate TUR into Environmental Policies and Regulations at the Regional, State and Federal Levels

Continue to play an active role in the Massachusetts Printers' Partnership and continue to provide comments and technical support as appropriate to DEP on ERP and other policy initiatives.

Continue to provide recommendations to the Clean State Council on implementation of pollution prevention by state agencies, continue to work with EOEA on training for the agencies and promote OTA services to the agencies, and work with STEP on the incorporation of innovative technologies into state facilities.

Continue to participate in the national Common Sense Initiative program for the electronics and printing industries and the regional CSI for metal working; and continue to lead in the formation of a national roundtable on electronic product recovery and recycling.

Continue to participate in the MWRA's Mercury Work Group.

Continue to contribute TUR and assistance perspective to policy development by state and federal regulatory agencies through participation in the regional and national P2 roundtables as well as through informal means.

Participate in the EPA's national program on state access to TSCA data and the proposed expansion of TRI data collection through the provision of written comments and oral testimony, including examples of chemical use data analysis performed by the state.

7. To Continue to Actively Participate in the Massachusetts Watershed Initiative, Complementing the Work of Other EOEA Agencies on the Basin Teams

Continue technical staff's work with all EOEA Basin Teams.

Provide leadership for the EOEA Ten Mile River Basin Team.

Continue to look for opportunities to work with watershed groups and associations, co-sponsoring TUR workshops, etc.

Carry out the intent of the Initiative by incorporating pollution prevention/TUR principles into Basin Teams' annual work plans and overall watershed Action Plans.

THE MASSACHUSETTS TOXICS USE REDUCTION INSTITUTE (TURI)

Fiscal Year 1996 Accomplishments

The Toxics Use Reduction Institute was established under TURA at the University of Massachusetts Lowell. The Institute is a multi-disciplinary research, education and policy center organized around nine specific mandates that fall within five broad objectives:

- to develop educational materials and programs on TUR for the public and business,
- to provide technical support services to the TURA agencies and other state agencies,
- to develop and provide curriculum and training for students and faculty,
- to engage in research, development and demonstration of innovative TUR methods and technologies, and
- to develop and offer a TUR Planners training program.

Under TURA the Institute was given the responsibility to host and consult with the Science Advisory Board (SAB) on listing and delisting of reportable chemicals, and has, at the request of the Administrative Council spearheaded an effort to fully evaluate the success and impact of the entire TURA program.

The Institute continues to meet all of its statutory requirements and deadlines and to develop and deliver innovative services well beyond its mandates. The list of the Institute's accomplishments is extensive. Highlights of the FY 96 year are summarized below.

Science Advisory Board

Since the formation of the Toxics Use Reduction Science Advisory Board, the Institute has sought the Board’s expert advice to evaluate petitions for delisting materials from the TUR Toxic or Hazardous Substance List. During FY 96 the Board met each month with TURA staff, representatives from the Department of Public Health, industry petitioners and interested members of the public, to consider petitions for delisting. The Board completed a careful review of a number of petitions including, chromium (III) oxide, hydroquinone, sodium hydroxide, ethyl acetate and butyl benzyl phthalate. After lenghthy discussions and thorough consideration of the first two petitions, the Science Advisory Board provided recommendations to TURI which resulted in Administrative Council action to delist these substances from the TUR List under specific circumstances. After careful deliberation and following many months of lengthy discussion by the Science Advisory Board, the Institute recommended to the Administrative Council that the last three substances remain on the TUR list.

Evaluating the Effectiveness of the TUR Program

The administrating agencies of the Toxics Use Reduction (TURA) program are jointly administering an evaluation of the entire TURA Program, which began in FY 95 and will conclude in FY 99 after the release of the 97 TURA data. TURI is spearheading the effort, using an interagency steering group to help coordinate the planning and implementation of the evaluation.

The steering group is obtaining advice and assistance from a multi-stakeholder consultation group. The consultation group includes representatives from the TURA Advisory Board, TURA filers, environmental organizations, and individuals expert in the field of program evaluation. Representatives from the TURA Advisory Board are responsible for keeping the Board informed on program evaluation progress.

The TURA program evaluation includes a number of components, including:

- Mandates fulfillment analysis - an assessment of whether the TURA agencies have fulfilled the specific mandates contained in the Act.
- Program Impact Analysis - an assessment of the impact of TUR on Massachusetts Companies The Program Impact Analysis focuses on the firms that are required to report and plan under TURA. Data gathered for this analysis comes principally from a survey of Large Quantity Toxics Users (LQTUs) and from an in-depth investigation of 25 LQTUs. These efforts are currently underway and are scheduled to be concluded in the fall of 1996.
- Cost/Benefit Analysis - an assessment of the public and private costs and benefits of the TURA program
- Policy Goals Fulfillment Analysis - an assessment of whether the program has achieved the six policy goals of the Act. This analysis involves an assessment of the program's performance against the goal of 50% reduction in toxic waste by the year 1997 (Goal 1 of the Act), involving an in-depth look at the TURA data including the construction of the 1987 baseline, trend and sectoral analysis, and data normalization. An analysis of performance on goals 2-6 is also in progress.

Two principal documents will be produced in the evaluation. The interim report, due in March of 1997, will present the results of the first survey and numerical data for 1987 to 1995. The final report, completed and submitted to the TURA Administrative Council in March of 1999, will present the results of the survey update and the numerical data for 1987 to 1997 as required by the TUR Act.

With assistance from OTA and DEP Institute staff led a year long project to measure progress using the TURA and TRI data. The federal Environmental Protection Agency provided funding assistance through a Pollution Prevention Incentive to States (PPIS) grant. Their were five principal objectives of the project:

- Improve the quality and useability of the TURA data.
- Define a methodology for measuring TUR progress using available data.

- Test the methodology using available data.
- Define a methodology for establishing a 1987 baseline.
- Conduct a "reality check" to evaluate the validity of the reported data.

The methodology was developed and applied to the 1990 through 1993 data. Results indicated a 13% reduction in byproduct generation and a 17% reduction in total toxics use from 1990 to 1993. Normalization of progress to account for changes in level of production did not significantly change the results. Work has now begun on a similar analysis using the 1994 TURA data.

Promoting TUR Through Research

The Institute sponsors and conducts research in three areas: new technologies and materials, analytical and planning methods and policy. These research activities are overseen by members of the Institute's Research Cluster. Activities during FY 96 included:

- Each year the Institute awards funds to firms willing to develop or pilot new technologies that promote toxics use reduction. These grants are awarded on a competitive basis and must be matched on a dollar-for-dollar basis by the participating firm. Under its FY 96 Matching Grants Program, the Institute awarded four grants totaling $50,000 for research in reduction and possible elimination of acetic acid use in the disperse dying of textiles, cleaning alternatives for adhesives and coatings process reactors, design for the environment in the electronics industry, and aqueous degreasing for electronic components manufacturing

- Three students were awarded Research Fellowships for the 1995/96 academic year. The funded projects included implementation of "No Clean" solder for ultra fine pitch surface mount technology, development of a practical, low-cost methodology to assess the environmental, worker and public health impacts of alternative technologies aimed at reducing toxic chemical use, and a guide to the recycling and reuse of aqueous cleaners.

- The Institute's first summer "inTURnship" program matched four students from the University of Massachusetts Lowell's College of Engineering with Massachusetts industries. The students worked on TUR projects to identify opportunities for TUR in the ISO 14001 requirements, to identify and evaluate options to replace HCFCs used to deflux circuit board assemblies, to identify TUR options through industrial hygiene audits, and to evaluate the compatibility of low-VOC conformal coatings with soldering masks.

- During FY 96 testing services were provide for 27 companies at the Surface Cleaning Laboratory, representing a variety of industries, including: metal finishing/fabrication, electronics, chemical, paper, precision instruments, biomedical and optics. One-day workshops and informational assistance were provided to staff at many other firms. Lab capabilities were enhanced by the acquisition of several pieces of equipment, including: a Miele spray washer, vacuum oven, microcam and a Greymills cleaning station.

- The Institute staff launched a new Clean Technology Demonstration Sites Program that established technology demonstrations at five innovative facilities. Over three hundred people have participated in tours designed to promote the adoption of cleaner technologies, and to demonstrate the effectiveness of toxics use reduction in promoting these technologies to Massachusetts industries.

- The Research Cluster staff completed several technical research projects supported by funds from the federal Environmental Protection Agency. These include an analysis of alternatives to chlorinated solvents used for metal degreasing at three Massachusetts companies, a project aimed at developing, testing and transferring a new biosynthesized, biodegradable surfactant technology as a component of aqueous surface cleaning chemistries.

- During FY 96 the Institute began work on a grant from the regional office of the Environmental Protection Agency to develop a demonstration of "Near-Zero VOC Lithographic Ink and Blanket Wash Systems." The system being evaluated is the Deluxe Printwise™ of Minnesota. Several lithographic printers were selected to participate in the study so as to include technical, economic and environmental evaluations as well as performance surveys and site visits to promote technology transfer.

- The Institute worked with the Massachusetts Strategic Envirotechnology Partnership (STEP) on several research projects. One project focused on the applicability of diffusion dialysis for closed-loop acid recycling. Other projects included ultra-violet (UV) curable coatings, effervescent spray technology and non-cyanide electroplating.

Technical Support for Toxics Use Reduction

The Institute provides several services to firms and government agencies engaged in toxics use reduction programs. Much of this work is conducted through the Technical Transfer Center, a library, data base and Internet access point that is solely dedicated to promoting toxics use reduction. Programs carried out during FY 95 include:

- The Technology Transfer Center has continued to develop. Another 1000 documents were added to its reserves during the past year. This includes about 70 journals and newsletters. During the year the Center responded to 1043 requests for reference services or Institute publications. A new librarian was hired and the TTC stacks are undergoing reorganization and more comprehensive cataloguing, which will facilitate user research and reference services.

- The TTC database has been merged with “Techinfo”, which represents the work of about 10 states’ programs in creating a bibliographic database of resources for pollution prevention technologies. Over a third of the total 15000 entries on this national database are from the TTC.

- A new system electronic search system, called "P2Gems" is an Internet based tool designed to assist TUR Planners in finding information about emerging clean technologies and management tools for technology adoption. It was unveiled in December 1995, and is being updated in June 1996. The update will double its size in response to the many new sources of information on the Internet about cleaner technologies. There have been 1010 visits to this site since its creation, and comments from users are very positive.

- With funding from the Environmental Protection Agency a new online librarian/engineerand web site manager for assistance to the Northeast Business Environment Network (NBEN). Usage of the NBEN Online site by regional businesses, academics and government is increasing. Between February and May there were over 6000 visits to the page. The Institute provided a day of training for NBEN members in January 1996.

- The Technical Support and Research clusters, in collaboration with the Merrimack Valley Manufacturing Partnership (MVMP) sponsored a workshop called "The Metal Cleaning Challenge". This workshop presented case studies from several companies, that have implemented TUR options independently or with the help of the Institute's Surface Cleaning Lab. There was also a presentation on the Lab and the services it provides.

- The Institute sponsored a seminar entitled "New Developments in Garment Wet Cleaning" for 60 participants at the Northeast Fabricare Association's (NEFA) regional trade show for the dry cleaning industry. The seminar included panel discussions with garment wet cleaners, researchers and equipment and detergent suppliers.

Education and Training in Toxics Use Reduction

The Institute designs and carries out various educational and training activities to promote toxics use reduction at the professional, college and secondary school level. This work is carried out by the staff of the Education and Training Cluster. During FY 96 the staff engaged in several activities including:

- The Institute presented two sections of the Toxics Use Reduction Planner Training Course to over 33 planners. Since 1992 twenty-five classes have been offered to over 658 people. 206 Certified TUR Planners, class attendees and interested parties attended the Industry Specific days. Refresher courses were also offered to prepare planners for the Toxics Use Reduction Planner Examination.

- TUR Planner requests for a more diverse geographical distribution of training locations resulted in three one-day Continuing Education Workshops held in Springfield, Taunton and Andover. Four workshops were offered at each conference. New workshops on OSHA and TUR were developed and offered.

- Two issues of the Toxics Use Reduction Planner Newsletter, *TURP Talk,* were distributed to over 2800 people in FY 96. The newsletter is dedicated to providing articles of interest to TUR Planners and a forum where planners may share experiences in developing and updating plans.

- Institute staff worked with OTA and DEP to design and convene presentations at five regional Plan Update Workshops in Waltham, Taunton, Worcester, Springfield and Haverhill. The workshops presented guidance for TUR Planners and the regulated community on filing the first Plan Updates.

- The Education and Training staff organized two program-wide retreats for the TURA program. In the first over 75 program participants from OTA, DEP and the Institute attended this "open space" meeting to discuss issues generated by staff and identify the critical issues to address in TURA's future. The second was a special retreat for TURA Administrative Council and Advisory Board members that resulted in a list of 14 recommendations for improving the implementation of the TURA program.

- With a grant from the Environmental Protection Agency the Institute has worked with Chicago's Center for Neighborhood Technology, the Tellus Institute and the Small Business Administration to develop a training manual for a non-perchloroethylene based garment cleaning process. This manual has been completed and piloted in two seminars directed towards dry cleaners interested in switching to a multi-process wet cleaning process and entrepreneurs seeking to enter a more environmentally friendly garment cleaning business.

- The Institute staff assisted the Department of Work Environment at the University of Massachusetts in convening a special graduate class in "Clean Production" which attracted students from several Boston Area colleges. Beginning in the fall of 1996, the Department will officially open a new Masters and Doctorate level curriculum concentration in Cleaner Production and Pollution Prevention.

- In collaboration with three engineering faculty from University of Massachusetts Lowell and faculty from University of Vermont, the University of New Hampshire, Dartmouth College and Worcester Polytechnic Institute, the Institute has developed a book of quantitative homework problems for engineering subjects that illustrate pollution prevention. These homework problems can be incorporated into almost all major engineering disciplines, including chemical engineering, civil/environment engineering, mechanical and materials processing engineering and industrial engineering. This project was funded by a grant from the Pollution Prevention Consortium of New England Universities.

- The Education and Training staff worked with Minuteman Vocational Technical School to develop a vocational education environmental technician program which was prevention oriented. The curriculum was successfully piloted, providing a number of continuing education students training in the appropriate skills needed to function as assistants to TUR Planners.

Outreach and Administrative Support for Toxics Use Reduction

The administrative and outreach functions of the Institute involve relations with the University and wider general public. The work is carried out by members of the Administrative Cluster and includes:

- During FY 96 Institute staff designed a new grants program called "Toxics Use Reduction Network" (TURN) to encourage non-governmental organizations to develop community-based training programs to promote toxics use reduction at the local and municipal level. A special announcement and information brochure was mailed out to over 5000 local government, public health and environmental advocacy groups and community-based associations in Massachusetts. This mailing generated 23 proposals from which the Institute selected five for funding. Funds ranged from $8,000-$3000. Programs included curriculum development, conferences, workshops and information sharing.

- The Institute has taken responsibility for publication and dissemination of *TURA Reports*, the newsletter of the state Toxics Use Reduction program. One edition of *TURA Reports* was produced during FY 96. The eight-page newsletter was distributed to a large mailing list that contains over 4000 addresses including all TURA filers and all state legislators.

- The administrative staff assisted the state Toxics Use Reduction Advisory Board in the organizing and logistics on selecting and presenting five Governor's Awards..

- The Institute worked with the Merrimack College's Microscale Chemistry Program to provide training and assistance in micro-scale techniques to the chemistry departments at the Lowell and Boston campuses of the University of Massachusetts. The micro-scale program was also offered to over 120 other participants from colleges and secondary schools.

- Staff from the Education and Training Cluster assisted DEP in writing a proposal to the EPA to develop training materials on pollution prevention and multi-media inspections for regulatory agency staff. Following the announcement of the award to the DEP, the Institute staff have been working to help develop the training program.

- Institute staff met with a consortium of colleges in Southeastern Massachusetts led by the Cape Cod Community College to assist in integrating toxics use reduction in the consortium's student intern program. The Institute's experience in vocation education has been used as a basis for this support and the Institute is planning a one day orientation class for all Consortium interns.

TURI
Fiscal Year 1997 Strategic Plan

Much of the early work of the Institute required the establishment of new structures and program elements such as the Technology Transfer Center, the Surface Cleaning Laboratory and the TUR Planners Training Program. With these programs now firmly in place, the Institute has begun to reach out in new directions in education and technology demonstration. Greater attention has also been given to focusing Institute programs on certain industrial sectors and the environmental technologies identified by the STEP program.

Each year the Institute prepares a Strategic Plan that serves to guide work during the years. A summary of the Strategic Plan for FY 97 includes the twelve goals listed below.

Promote Innovative Research and Demonstrations

Goal 1. To identify and promote innovative methods, materials and processes that achieve TUR by showcasing Massachusetts industry's accomplishments and demonstrating new cleaner technologies for the future.

This year, the Matching Research Grants and Clean Technology Demonstration Sites Programs will be merged into one funding vehicle to provide companies with the opportunity to showcase their accomplishments as well as to test and demonstrate new cleaner technologies. Five projects will be funded. Case studies, outreach, and site visits focused to promote learning and technology transfer will be a component of each project. The Institute will continue to offer a number of site visits to each demonstration sites.

The Institute will fund three University of Massachusetts Research Fellows in the areas of electronics, metal finishing and sustainable production methods. The work of these fellows will be presented and published by the Institute.

Expand Community Education

Goal 2. To create an understanding of toxics use reduction at the local level among Massachusetts communities, regional organizations, labor unions and public interest groups, and municipal officials.

Last year the Institute launched a grant program aimed at promoting TUR literacy and partnering among community groups, local government, smaller businesses and industry. This year the Toxics Use Reduction Networking (TURN) grants program will be expanded and will include two tracks: community groups and municipal officials. Demonstration site visits will also be encouraged for these target audiences.

Provide Surface Cleaning Laboratory Services

Goal 3. To assist industry in the search for safer cleaning processes.

The Surface Cleaning Laboratory (SCL) will continue to test and evaluate aqueous cleaners and related equipment and aid companies in selecting process-specific aqueous cleaning systems. The SCL will also facilitate technology transfer of effective and innovative cleaning methods. This year the SCL will expand its scope of services to include closed-loop aqueous cleaner systems and initiate basic research doing solvency testing. The Institute will host the "Mr. Clean" Surface Cleaning Conference and offer two SCL Continuing Education workshops. The Institute will participate with the Office of Technical Assistance in a "Cleaning is Greener in Massachusetts" campaign. A fact sheet on CFC alternatives, a cleaning chemistries database and case studies from SCL will be developed. The Institute will also continue to disseminate the results of the EPA sponsored Cleaning Alternatives Project.

Train and Support TUR Planners

Goal 4. To build upon the established level of understanding of toxics use reduction in Massachusetts by identifying best practices and techniques and diffusing the knowledge and skills needed to further enhance industrial TUR performance.

The Institute will offer two 48-hour TUR Planning courses in FY 97. Existing continuing education workshops will be made available to TUR Planners for credit. Institute staff will conduct a TUR Planner Debriefing to gather lessons learned in the process of updating TUR Plans in August of 1996. These lessons will initiate a new round of curriculum development and a focused call for papers and presentations to be presented at a two-day TUR planner conference in the Spring of 1997. Institute staff will also work with the TUR Planner Association to solicit recommendations for most appropriate targeting of TUR Planner education efforts. The Institute will participate in the "Forum for Best Management Practices" project with NBEN.

Target Certain Industrial Sectors

Goal 5. To focus on the generic needs of specific industrial sectors for developing new technologies or business practices.

Along with surface cleaning, the Research staff will focus on metal fabrication and finishing and electronics assembly (PWB), printing and dry cleaning. For metal fabrication and finishing. One project will focus on the use of machining fluids and TUR. A workshop will be developed to encourage communication along the entire supply chain (smelters, forgers, stampers, welders, finishers, etc.) about TUR issues specific to the metal fabrication and finishing industries. Four case studies will be published.

For electronics assembly, a workshop will be held on the future of electronics industry including issues of sustainability and additive processes. A TUR continuing education module will be developed to describe and explain M/A-COM Design for the Environment methods.

The Institute will continue its involvement in an EPA sponsored printing project with Goldman Environmental and in providing technical support for garment cleaners on alternative technologies for meeting environmental standards.

Provide Technology Transfer Services

Goal 6. To actively collect and disseminate information on toxics use reduction, safer materials and cleaner technologies to Massachusetts companies and other organizations and individuals involved with toxics use reduction and related programs.

The Technology Transfer Center (TTC) will continue to acquire, catalogue and abstract literature on TUR and cleaner production in its database. A learning library has been established and will be used to develop the capacity of TUR and cleaner production instructors. The TTC will continue to provide services as a research library, pollution prevention clearinghouse, literature search service, and the Institute Information Booth.

The Institute Web Page, providing on-line access to Institute news and publications, will be expanded and maintained. "P2 Gems", an Internet search tool for facility planners, engineers and managers who seek technical and useful management information on the Worldwide Web, will be maintained.

Promote General Education

Goal 7. To create and enhance understanding and practice of TUR in students, teachers, and staff at all levels of education through conferences courses, curricula and workshops.

The Student Summer InTURnship Program will be continued. Students will be matched with companies to work on TUR projects. The interns will be oriented to TUR through a three-day training. Follow-up reports will be completed.

The Institute will continue its participation in the Pollution Prevention Consortium of New England Universities and the new Cleaner Production and Pollution Prevention concentration in the University of Massachusetts Department of Work Environment. A gradate level course in Cleaner Production will be offered in the Spring Semester in Boston.

The Institute will convene three focus groups for K-12 educators on TUR in the curriculum.

The Institute will participate in the design and delivery of a one-day TUR orientation of students for the Southeastern Massachusetts collaborative TUR internship program.

The Institute will continue to work with the consortium of Southeastern Massachusetts colleges led by Cape Cod Community College to integrate toxic use reduction in the consortium's intern program.

Promote TUR in the Public Sector

Goal 8. To create and enhance the understanding of toxics use reduction and cleaner production in the Commonwealth and the Federal Government.

The Institute will work with the Massachusetts DEP and NEWMOA on an EPA Environmental Technology Initiative Project to develop and pilot a training curricula targeting environmental regulatory staff's core competencies for incorporating pollution prevention and Cleaner Technology alternatives into environmental regulatory actions. Institute staff will also participate in workgroups and conferences of the National Pollution Prevention Roundtable and the Northeast Pollution Prevention Roundtable. Institute staff will continue involvement in the EPA's Common Sense Initiative, the National Institute for Science and Technology Pollution Prevention Training Program.

Promote Public Awareness

Goal 9. To create an understanding of toxics use reduction in the general public through articles, conferences, courses, radio and television broadcasts, seminars, videotapes and workshops.

The Institute will publish one edition of *TURA Reports* and two editions of the *TURP Talk* newsletter. Additional company case studies and environmentally conscious manufacturing company profiles will be developed this year. Outreach will be done through trade associations and chambers of commerce. The Institute will develop video footage of technology demonstration site visits to feature the learning which comes from seeing TUR in action. The TTC will continue to advertise and make available copies of the over 55 Institute publications and fact sheets that are frequently requested by professionals, students and government agencies.

Coordinate with Other Program Stakeholders

Goal 10. To develop and maintain active relationships with representatives of Massachusetts businesses, state, federal, and local agencies, state and federal legislators, regional organizations, labor unions and public interest groups.

The Institute will solicit input on staff work from the Institute's Industry Advisory Committee and its Public Interest Advisory Committee. The Institute will also participate in the TURA Advisory

Board, the TURA Administrative Council and the TURA Coordinating Group by attending meetings. The Institute will also participate in the Northeast Business Environment Network, the Pollution Prevention Consortium of New England Universities, the National Pollution Prevention Roundtable, the Northeast Waste Management Officials Association, the TUR Planner Association, and the Massachusetts Manufacturing Partnership integration project. The Institute will contribute to user segment regulation development, annual TUR Reporting and Plan Update Workshops, TUR Planner exams and grading, TUR Planner Continuing Education credit coordination and Governor's award assistance.

The Institute will continue to seek scientific advice from the Science Advisory Board on listing and delisting petitions and will continue to host and service the meetings of the SAB. It is expected that this year the SAB will complete the backlog of petitions and move on to assist the TURA program in setting priorities in chemicals and user segments.

Complete the TURA Program Evaluation

Goal 11. Complete the TURA program evaluation and use its results to assist in setting the future direction for TUR in the Commonwealth.

The Institute will complete and summarize the findings from the TURA Program Evaluation. This report will be reviewed by the consultative group and Advisory Board before final publication. It is expected that summaries of the report will be distributed widely.

Maintain Smooth Work Environment Relations

Goal 12. To maintain a smooth functioning work environment through coordination with the University administration and the development and implementation of internal practices, procedures and policies.

The Institute has developed good working relationships with the University administration and has established administrative policies and procedures to facilitate staff work. This year staff will work to strengthen inter-cluster project integration by closely linking research, education and technical support project outcomes. Key objectives include providing Internet access training to all Institute staff, enhancing project management skills and coordination of graphic and writing skills training and support.

THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

Fiscal Year 1996 Accomplishments

Under the Toxics Use Reduction Act the Department of Environmental Protection has a number of responsibilities:

- to develop and maintain specific toxics use reduction planning and reporting regulations;
- to manage planning and reporting data;
- to collect and distribute fees from the regulated community;
- to establish and manage a program for certification of toxics use reduction planners;
- to establish a bias towards toxics use reduction as a preferred means of protecting the environment;
- to incorporate a multi-media focus into its regulatory programs; and
- to work with other TURA agencies to implement and improve the TUR program.

Fiscal year 1996 was highlighted by positive organizational developments, on-time completion of all program projects and emphasis on enforcement of the TURA statute, the creation of additional opportunities for cooperative TUR projects with other TURA agencies, and the strengthening of the overall program within the Department. The following highlights FY 1996 accomplishments in the areas of program implementation and program development.

PROGRAM IMPLEMENTATION ACCOMPLISHMENTS

1994 Toxics Use Reduction Reporting Information

Data gathered from filers was entered into the computer, quality assurance/quality control procedures were implemented and corrections were received from the regulated community. The data was analyzed and released to the public in January 1996. A total of 598 facilities filed over 2400 forms for 1994. The total reported amount of byproduct generated declined 3% from the previous year. The amount of byproduct reported by facilities declined 16% from the amount reported in 1990. Although the amount of use increased slightly from 1993 to 1994, since 1990 there has been a 17% decrease in use by reporting facilities. This public release of data was completed on-time, involved more information than ever before and was accomplished with newly assigned data specialists. The 1994 data included facility specific trend information, comparisons of actual and projected information, review of selected chemicals and ranking of key production processes in the state.

The graphs shown on the following pages illustrate use and byproduct information for two groups:

- "core" companies: those companies and chemicals that have been in the system since 1990, and
- "non-core": all TURA reporting companies.

Because the universe of companies and chemicals required to be reported have expanded since the inception of the program, DEP has tracked the use and byproduct trends for the original "core" companies as a stable indicator of TURA progress. The non-core company information reflects the dynamics of companies coming into and leaving the regulated community under TURA.

1987 Baseline Project

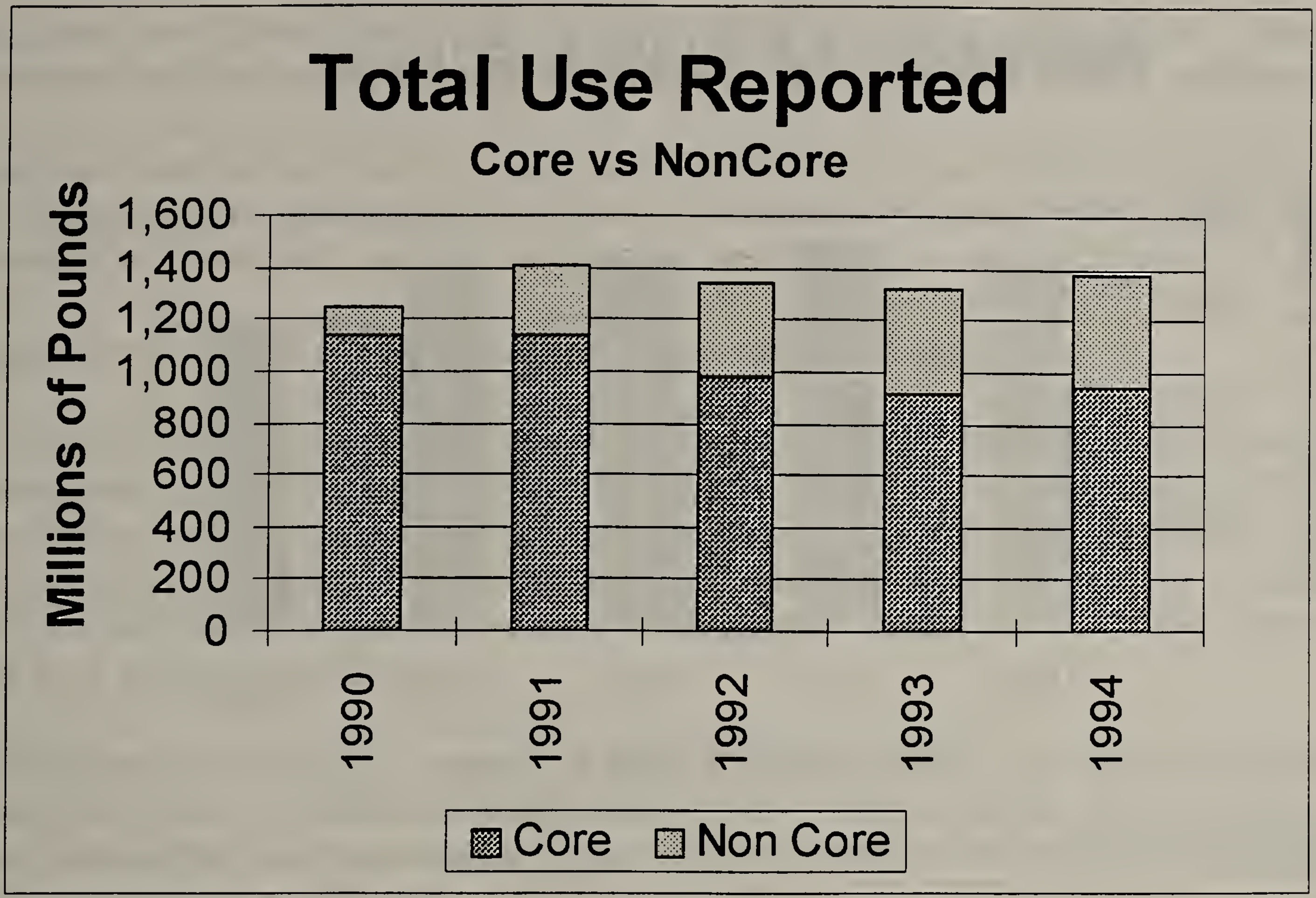
TURA's 50% byproduct reduction goals establishes 1987 as the baseline from which to measure byproduct reduction progress, however, TURA was not passed until 1989 and reporting under the act was not required until 1990. As a result, it became necessary to develop an estimate of 1987 byproduct levels in Massachusetts. The 87 baseline project will provide data and estimates of total chemical use, byproduct levels, transfers and releases for 1987. The report is in final draft form and is being reviewed by the Toxic Use Reduction Institute (TURI). The 1987 baseline report is expected to be released in late November and will be used as part of the overall TURA Program Evaluation effort.

Compliance and Enforcement

DEP conducted multi-media inspections at 1,080 industrial facilities. Multi-media inspections are whole-facility inspections that simultaneously check for compliance with applicable environmental rules for air, industrial wastewater, hazardous waste, solid waste and the Massachusetts Toxics Use Reduction Act. These inspections are also used to identify TUR options, to promote TUR as a sound management practice, and to establish TUR as the preferred means of achieving environmental compliance.

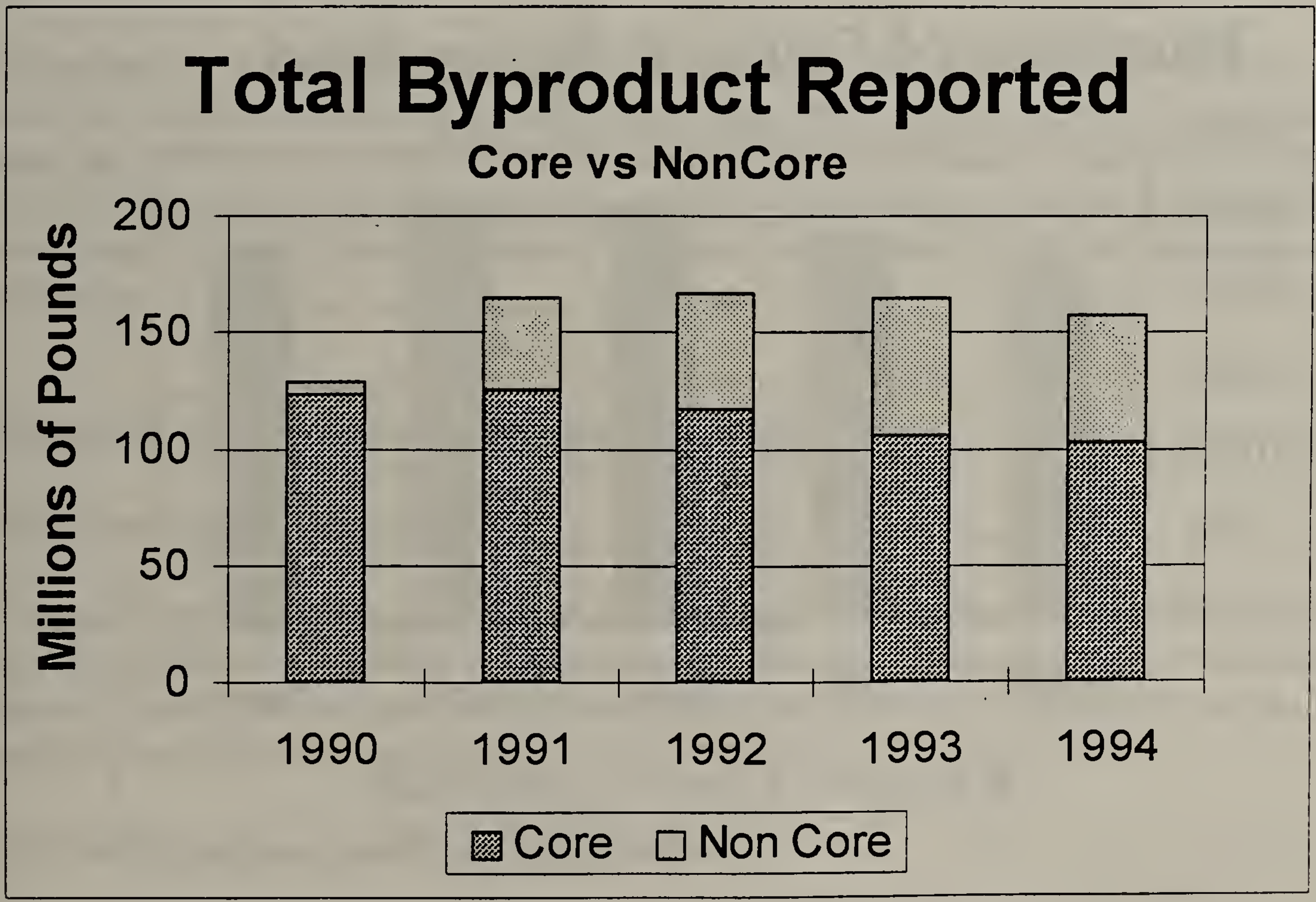
DEP staff conducted on-site inspections at 149 TURA reporting facilities and screened for TURA applicability at 900 facilities. The TURA filing facilities' reports and plans were reviewed for accuracy and completeness. Based on a review of reports and plan summaries, 20 of the TURA facilities inspected had been targeted as high risk to be out of compliance. As a result of multi-media inspections, approximately 34 facilities were issued enforcement actions for their TURA violations, including 6 facilities which were cited for failure to file.

During the year, the TURA staff audited approximately 600 TURA reports for completeness and timely filing. In addition, DEP staff contacted each firm that filed in 1995, that did not file in 1994, in order to determine whether the firm was legitimately out of the system. This work generated approximately 100 Notices of Noncompliance (NONs) for filing violations and



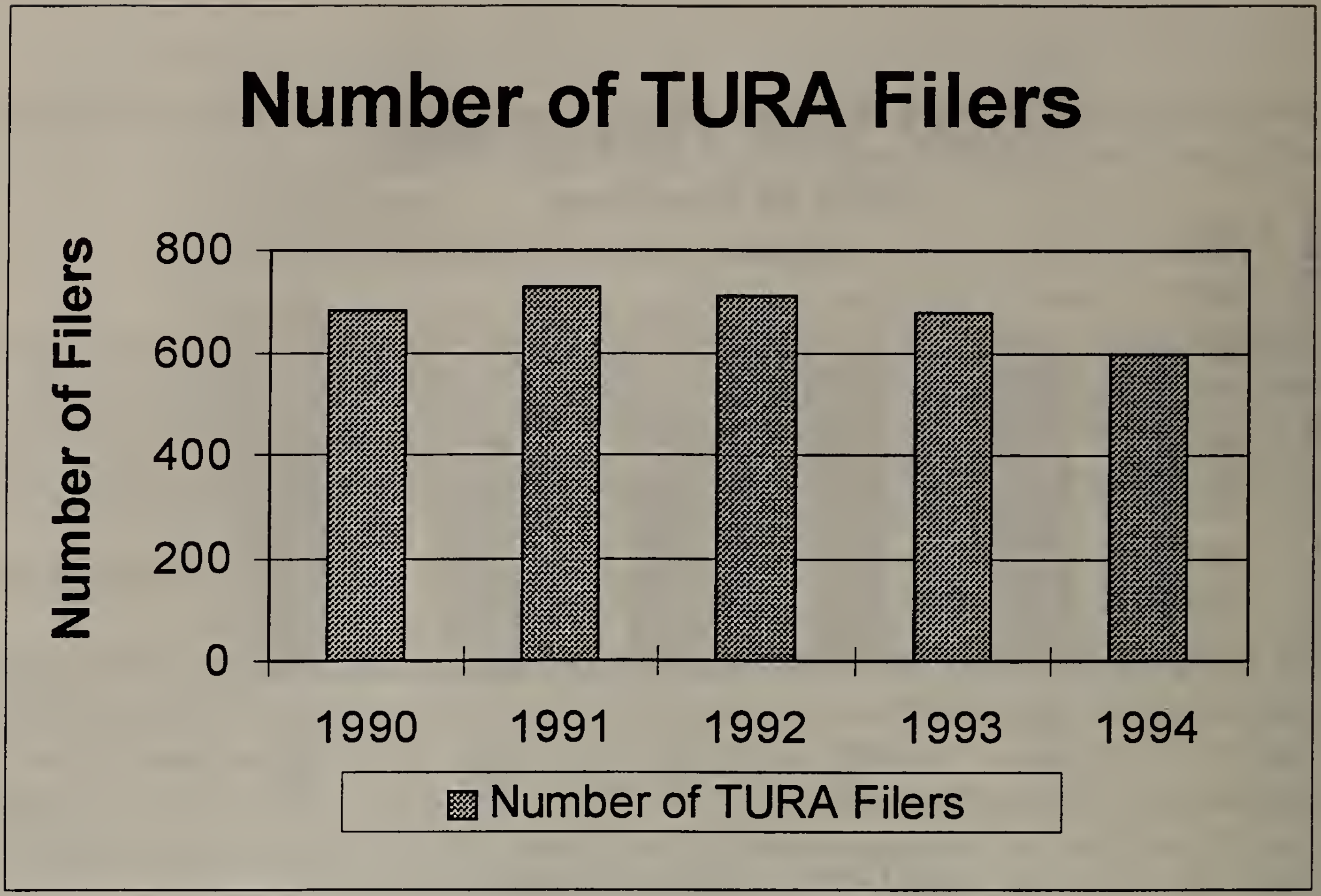
Total Use Reported

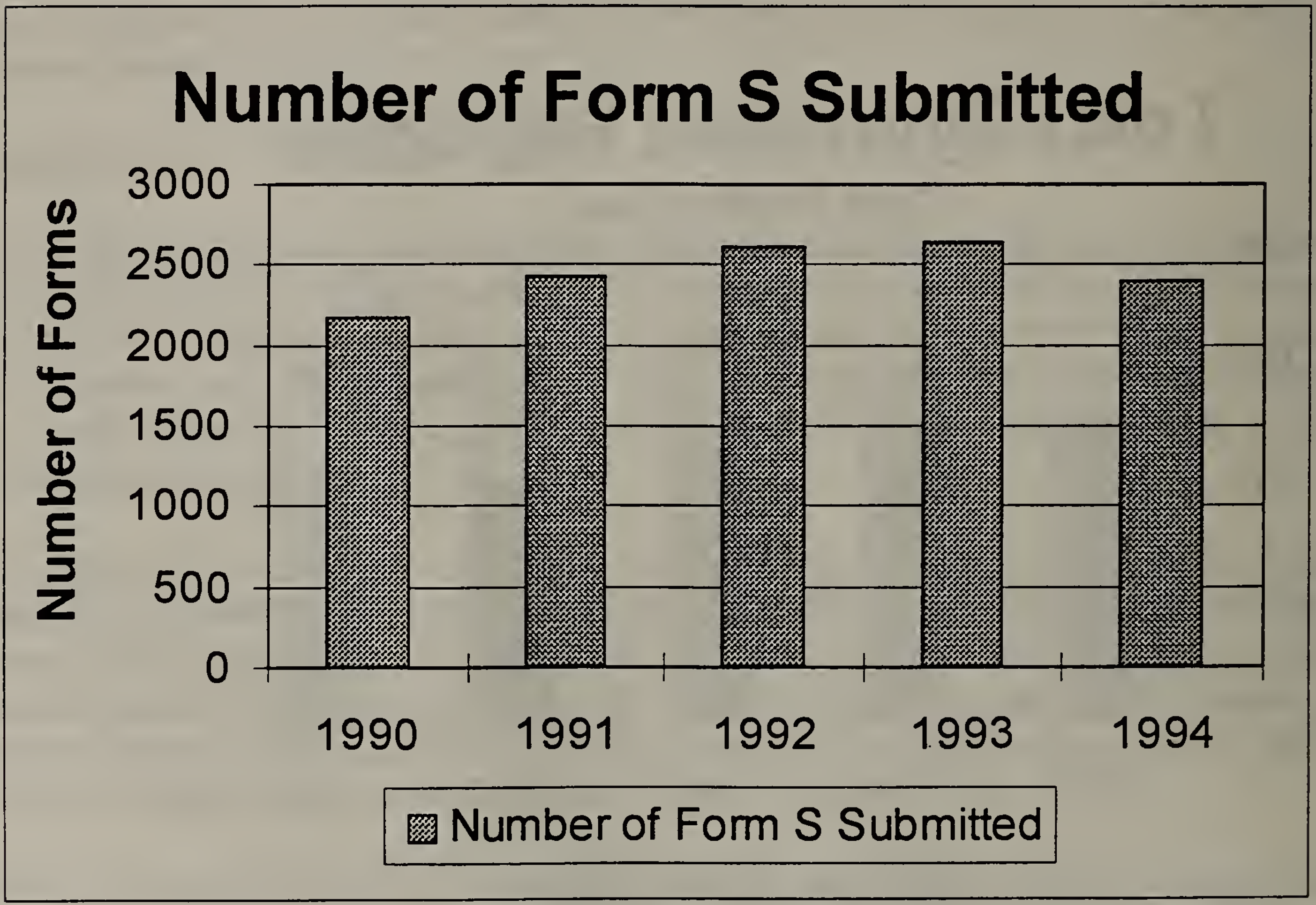
Core vs NonCore



Total Byproduct Reported

Core vs NonCore


Number of TURA Filers
Number of Filers
800
600
400
200
0
1990
1991
1992
1993
1994
▨ Number of TURA Filers


Number of Form S Submitted
Number of Forms
3000
2500
2000
1500
1000
500
0
1990
1991
1992
1993
1994
▨ Number of Form S Submitted

Administrative Consent Orders with Penalties (ACOPs) for planning violations. Three TURA filers were referred to the Attorney General's Office for prosecution of civil violations.

The Department also initiated a project to better track and manage TURA enforcement in each of the regional offices, and effort which resulted in the identification of improvements in inspection processes and increased coordination of inspections and enforcement of TURA.

Toxics Use Reduction Planner Management Accomplishments

The Toxics Use Reduction Planner Program (Planner Program) has now reviewed and certified approximately 525 planners as either General Practice Planners (a "G" may certify TUR Plans and Plan Updates for any facility in the Commonwealth) or Limited Practice Planners (an "LP" can only certify the TUR Plan or Plan Update of the facility at which he or she is employed). In addition, the Planner Program has also recertified approximately 230 planners as either GPs or LPS for a second 2-year period.

A TUR Planner Examination was held on May 18, 1996. The exam was taken by 38 individuals. From this group, 33 achieved passing scores and 5 failed. In the first two years of the examination, there were approximately 186 planners tested. In recent years, an average of 30 individuals have taken the test.

The Department worked extensively with the Toxics Use Reduction Institute (TURI) to maintain the planner continuing education unit approval activities. This included, but was not limited to, the review of applications for course credit determination, attendance information, records of participation and continuous improvement coordination. The program approved new courses and provided special assistance and coordination with TURI for approximately 150 applications.

PROGRAM DEVELOPMENT ACCOMPLISHMENTS

TURA User Segment Regulations

The Department has completed the final drafting of the TURA User Segment Regulations. The proposed regulation is intended to group similar processes and products into "user segments". This was a product of over two years' development with interested stakeholder from the regulated community and TURA program staff.

Plan Update Guidance and Reporting Guidance

The Department, with the assistance of OTA and TURI, completed development and outreach to assist the regulated community in preparation of the annual report submittal. Outreach included the development of the first Plan Update Guidance document and the updated 1995 TUR Reporting Package. All documentation was completed on time with stakeholder involvement, and was followed by outreach training programs throughout the Commonwealth. The training programs included practical step-by-step instructions and was a cooperative effort between the various TURA program agencies.

Planning and Policy Development

The Department completed an Integral Recycling Policy which was a cooperative effort between the stakeholder, DEP staff and TURA program staff . The policy provides guidance on what types of activities are considered "integral recycling" and general guidance on how each activity is regulated under the Department's hazardous waste regulations. This was an important issue to the regulated community in order to clarify reporting under TURA and compliance under hazardous waste rules.

The Department also provided the regulated community with guidance on how to report and plan for delisted substances, as well as substances added to the TURA lists. This included the delisting of metal alloys of copper, nickel, chromium, cobalt and manganese. Additional chemicals were also added to the TURA lists, due primarily to expansion of the federal Toxics Release Inventory program.

TURA Data Management Accomplishments

The data base was modified to accommodate approximately 286 new chemicals that were added due to expansion of EPA's SARA 313 list. This change in applicable TURA reportable chemicals was integrated into the TURA Planning Guidance and was sent to the regulated community as a stand alone document.

There have been various improvements in the TURA data entry system that have been implemented in order to expedite the data entry process. These have included the implementation of the TURA data on the Internet and expansion of the information available to the public regarding TURA chemicals and TURA filers within the state. In addition to providing TUR information electronically this year, the Department has successfully initiated the "One-Stop" Reporting Demonstration Project. This effort will redesign reporting systems, provide a foundation for several regulatory streamlining initiatives and create an opportunity for improved TURA reporting processes. This project will assist in the completion of the TURA statutory requirement for consolidated reporting and DEP has been awarded $500,000. from EPA to support the project.

TUR Planner Management Program Improvements

The Toxics Use Reduction Planners Association (TURPA) is the professional association of TUR

Planners. It has approximately 180 members, meets on a quarterly basis, and had its first meeting in November of 1995. During a typical meeting, members discuss issues of concern to TUR Planners, such as regulatory and agency issues, technical education, and professional activities. Representatives of the Department's TURA Program meet monthly with this stakeholder group to discuss issues specifically relevant to the relationship between the Department's Planner Program and TURPA, such as CEU's, certification, recertification, planning and education.

The Department, in coordination with the Toxics Use Reduction Institute (TURI), maintained and improved continuing education unit (CEU) activities. Efforts included an improved system for course approved for CEU credit and increased coordination with universities and non-governmental organizations for course offerings and approvals.

This past spring and summer, the Planner Program researched, produced and distributed to all planners, a Directory of Courses and Activities Previously Approved for Toxics Use Reduction Planner Recertification Credit (Planner Course Directory). The development of the Planner Course Directory is in direct response to numerous requests from planners for a listing of courses and activities taken by planners, which have been approved by the Department for recertification credit. The Planner Course Directory provides course names, sponsors, and telephone numbers when available.

TUR Integration Activities

The Environmental Results Program - DEP's broad based effort to redesign the way it regulates by focusing increased attention on performance rather than process - completed its demonstration phase with the assistance of TUR personnel. DEP has begun the development of performance based standards, self-certification procedures, data tracking systems and other related ERP requirements. As part of the ERP effort, a pollution prevention workgroup was established to promote pollution prevention in the standards developed for the 22 participating companies.

The Department, with assistance from OTA, began implementation of the Massachusetts Printers Project, a new regulatory approach developed in conjunction with EPA's "Common Sense Initiative" project. This project implemented a multimedia compliance approach, compliance guidance document and a self-certification process for this industry segment. So far, 434 printers in the Commonwealth have provided self-certifications to the Department and an analysis of the "Printers Project" benefits is underway.

The Department secured funding and began the first phase of the Environmental Technology Initiative (ETI). This project, sponsored by EPA, will assist the Department in efforts to integrate pollution prevention through training. DEP has completed the overall project planning, created teams to manage the project activities and initiated cross training for all environmental media programs to promote pollution prevention.

The Department began coordination of significant innovative technology initiatives as part of the Strategic Technology Environmental Partnership (STEP). The Department created a Innovative Technology Office and Innovative Technology Coordinators within the Bureau of Waste Prevention, Bureau of Resource Protection and the Bureau of Waste Site Cleanup.

Regional Office Coordination Improvements

Regional TURA program personnel participated in the development and implementation of TURA reporting and planning training to the regulated community. This effort included a training session for the filers, planners and program staff in each region throughout the state.

Regional program personnel participated in the development and review of a TURA enforcement guidance for regional compliance and enforcement personnel. The guidance will assist other regional staff in conducting and completing TURA inspection and enforcement activities.

The Department initiated a project to better track and manage TURA enforcement in regional offices which began with the accumulation and analysis of TURA enforcement information from each region. Improvements of inspection processes were initiated and efforts were taken to increase the coordination of inspections and enforcement of TURA.

The Department initiated quarterly TURA Coordination meetings to discuss TURA issues in the regions, to discuss TURA activities in Boston and develop coordinated decision making on TURA program activities.

DEP
Fiscal Year 1997 Strategic Plan

The Toxics Use Reduction Program at the Department of Environmental Protection has completed many of the required mandates set forth in the Toxics Use Reduction Act and will, in the upcoming year, continue to devote the resources needed to maintain and improve TURA reporting, planning, toxics information, inspections, enforcement and integration.

For DEP, fiscal year 1997 offers a number of opportunities to integrate TUR into the agency's on-going initiatives, such as the Environmental Results Program, One-Stop Reporting, Innovative Technology, Performance Partnership Grant and other EPA/DEP Projects. In addition, through its organizational realignment, DEP will now be better able to initiate new efforts to integrate pollution prevention into the Bureau of Waste Prevention, Bureau of Resource Protection and the Bureau of Waste Site Cleanup.

The TUR program at DEP has enjoyed much success with its efforts to integrate TUR into its many Department activities. DEP will continue to build upon this success by working more effectively with the regional offices, providing more focused support to DEP field service units that implement TUR in the regulated community.

Fiscal Year 1997 will also offer an opportunity to more fully realize the potential of the TURA data through improved management, increased accessibility, and expanded analysis.

The following is a summary of DEP's planned FY 1997 activities.

PLANNED PROGRAM IMPLEMENTATION ACTIVITIES

Toxics Use Reduction Reporting Information

The 1995 TURA data submittals were delayed by one month to correspond with the due date for the federal Toxic Release Inventory (TRI) reports. DEP is in the process of entering the 1995 TURA reporting data and applying standard quality control (QC) procedures. Each of the over 600 reports has been logged in and is being reviewed for completeness. After the data has been entered into the computer, 50% of the reports will be audited for data entry accuracy. Once the data has been entered and QC procedures have been implemented, DEP will generate a computerized exception report which identifies any inconsistencies in the data. The exception report will be mailed to companies that submitted any questionable data, and staff will work with the facilities to obtain corrections. The 1995 TURA data is expected to be ready for release in January 1997.

As part of DEP's ongoing efforts to improve the quality and useability of the Department's TURA database, a workgroup will be established to address and correct the various data problems and issues. The workgroup will consist of representatives from the Office of Technical Assistance (OTA), the Toxics Use Reduction Institute (TURI) and the Department. The workgroup will focus on data issues in three areas: 1) improve TUR data infrastructure; 2) standardize TUR data measures and yearly reports; and 3) improve data interpretation. The workgroup will also identify errors in the operating database and make appropriate corrections. Schedules will be developed for data releases, planned data analysis activities, and reporting to the general public.

Program Evaluations and Reporting

The Department will submit another annual report to the Massachusetts State Legislature regarding progress to date, of mandates established for DEP by the Toxics Use Reduction Act.

The Department will continue to work with the Office of Technical Assistance, the Executive Office of Environmental Affairs, and the Toxics Use Reduction Institute to conduct a program-wide evaluation of the Toxics Use Reduction Program.

In conjunction with its regional offices, the Department plans to develop regional-based reports for the public that will provide specific information profiling a particular region's toxics chemicals and toxic chemical users.

Compliance and Enforcement

Enforcement of the reporting and planning requirements will include a review of 1995 reports and plan updates, and continued enforcement through file reviews and field inspections. Several new tools, including a report check-in system and automated reporting compliance review system, will help DEP identify and correct deficiencies in reporting.

DEP will target at least 1000 facilities for multi-media inspections, including an initiative to target TURA filers that have a "high risk" of TURA violations based on Form S and Plan Summary submittal. In addition, probable TURA filers who have not filed TURA reports and plans will also be targeted. Furthermore, under DEP's multi-media inspections, any of the 1,000 facilities inspected who are currently TURA filers will be inspected for compliance with reporting and planning requirements, and all non-filers will be screened to determine if they need to file.

The TURA Program will finalize the TURA Enforcement Guidance (TEG). This guidance document will explain the approach the TURA Program will use to enforce the TUR Act and its implementing regulations. The first part of the TEG is organized to help foster a better understanding of the relationship between enforcement and the planning and reporting requirements, as part of the Department's overall enforcement program.

Regional Office Involvement and Communication

With the cooperation of TURI and OTA, DEP will provide ongoing TURA training to inspectors. The training is designed to help develop a better understanding of the TURA program regulations and to improve inspector proficiency in TUR compliance assurance.

In cooperation with its regional offices, the Department will prepare TURA inspection and enforcement reports and analyze the TURA database to determine appropriate levels of support for the regional field activities.

Regular coordination meetings will be held with the compliance and enforcement staff in all four regional offices.

Boston staff will provide various lists of facilities to target for TURA inspection based on poor enforcement histories, characteristics indicating the need to file under TURA, or other pertinent indicators of potential compliance problems.

The number of TURA filers requiring inspection under the EPA inspection grant program will increase substantially in 1997.

In cooperation with the Office of Technical Assistance, the Department will train regional staff on the new TURA enforcement guidance documents.

The Department will conduct regular meetings with regional TUR coordinators to discuss program implementation issues in the field and to integrate regional input into overall program developments.

Toxics Use Reduction Planner Management

A Toxics Use Reduction Planner examination will be held in the spring of 1997.

Monthly coordination meetings will be held with TUR Planners to ensure an understanding of TUR regulatory requirements and current policy initiatives. These meetings will also provide a forum for TUR Planners to bring issues of concern to the Department for discussion and resolution.

DEP will continue to review, evaluate and approve certification and re-certifications for TUR Planners for both Limited Practice Planners and General Practice Planners, and respond appropriately to their questions and concerns. This will be accomplished through regular meetings of stakeholders throughout the year. This group will coordinate changes to continuing education unit credits, training, planner disciplinary procedures and certification activity.

PLANNED PROGRAM DEVELOPMENT ACTIVITIES

Organizational Development

The Department will continue to implement an organizational realignment designed to improve accountability, increase emphasis on measuring success, establish integrated priority setting, emphasize compliance and enforcement, and improve management decision making. Realignment will include a restructuring of the Bureau of Waste Prevention and the Bureau of Resource Protection. The TURA program, currently located within the Bureau of Waste Prevention (BWP), will benefit from restructuring due to added emphasis being placed on pollution prevention, a customer service orientation and improved integration.

The Department, in cooperation with the Office of Technical Assistance and the Toxics Use Reduction Institute, will be joining other media program staff within the Bureau of Waste Prevention to cross-train DEP personnel. Along with hazardous waste, industrial wastewater, solid waste, air quality and auto inspection and maintenance, TURA will develop training modules and participate in providing cross training to Bureau staff.

Environmental Results Program

The Department will be implementing the Environmental Results Program (ERP) with several industry sectors and groups, including the dry cleaning, photoprocessing, sewer connections, combustion sources and printing industries. The Department will also be developing guidance assistance and outreach programs for these industries strongly emphasizing pollution prevention and innovative technologies. To properly implement the program, the department will be developing compliance and enforcement strategies and database systems to store and use information from the companies. This ERP initiative will be supported by several DEP programs and include consideration of appropriate toxics use reduction mechanisms.

Data Management Improvements

Work has begun to develop a set of standard TUR data reports for the TURA program agencies. The Department is also assisting the TURA agencies by developing customized data reports for each of them. This will ensure that future data analysis and communication is consistent, regardless of which partner is performing the analysis or which program element is analyzed.

The Department will also develop a protocol through which TUR data reports will be released to the general public. This protocol will ensure that all partners have participated in gathering and reviewing all information prior to any public release. In addition, the protocol will improve consistency of data presentations.

The Department has established a TURA "Home Page" on the World Wide Web and will ensure that all TURA information is made available electronically through Internet systems. DEP will continue to provide additional information as it becomes available and will improve the TURA home page throughout the year.

The Department will complete several activities regarding "One-Stop" reporting and will include toxics use reduction reporting in the project activity. Staff and teams will be designated for the project, a database will be developed using the Joint Applications Design (JAD) methodology, the new reporting system will be integrated into several DEP operations, and the project activities will be coordinated with other environmental agencies.

Identification of User Segments

The Department will complete the development and promulgation of User Segment Regulations specified in the Toxics Use Reduction Act. After promulgation of the regulations, the Department will coordinate with the Office of Technical Assistance and the Toxics Use Reduction Institute to compare data on chemical use efficiency and to facilitate the transfer of technologies to promote Toxics Use Reduction.

Development of Toxics Use Reduction Planner Management Improvements

The Department is preparing to implement TUR Planner disciplinary procedures to improve consistency and to provide additional support to regional compliance and enforcement personnel.

The Department will be updating the TUR Planner Course Directory with information on new courses and activities to support the TUR Planner's recertification process. The Department is working closely with the Toxics Use Reduction Institute, the Office of Technical Assistance and the TUR Planners Association to provide TUR Planners with the most up-to-date information regarding the program. This effort will include coordination with the Department's regional office staff to improve and provide more support and information to the TUR Planners.

Waiver Regulation Development

The Department will continue with the development of regulations in conformance with the Toxics Use Reduction Act, to allow companies to petition DEP for a temporary waiver of any law or regulation DEP administers if the company proposes to comply with the law or regulation through the use of a TUR technique or technology. The initial internal development of these draft regulations began in FY 1996, and DEP plans to expand that effort in FY 97 by seeking considerable input and involvement from the regulated community, environmental interest organizations, citizens, professional associations and governmental bodies. Following development, any draft regulations will proceed through the extensive public hearing process in accordance with state procedural regulations.

Integration of TUR into the Department

The Department will create a strategic plan for the development, implementation and analysis of TUR integration throughout various Bureaus of the Department. This will involve the development of Bureau specific plans that include: identification of specific projects; development of integration goals and project goals; activity schedules and milestones; performance indicators and resourcing plans.

Program Coordination with EPA

The Department will continue this year to work with EPA on several pollution prevention initiatives and will participate in promoting pollution prevention in several EPA supported grant activities, including:

- the performance partnership grant with EPA which will include TURA performance evaluation and TURA enforcement activities;
- the environmental technology initiative grant which will include developing cross training; and
- the autobody industry and printed wiring board grant projects which involve the identification and facilitation of pollution prevention activities.

DEP will also continue to coordinate with EPA on Toxics Release Inventory expansion, toxic chemical information management systems, Toxic Substance Control Act information expansion, enforcement coordination projects, Project XL, the Environmental Leadership Program, state-level Community Right To Know and the Common Sense Initiative.

TURA FUND EXPENDITURES

The following information documents all revenues collected into and expended from the Massachusetts Toxics Use Reduction Fund (Fund 149). Lists of TURA agency staff can be found at the end of this report.

Overview:

In FY 1996, the three TURA agencies were fully funded and fully operational. Due to the extension of the deadline for TURA filing and fee payments from July 1, 1996 to August 1, 1996, revenues collected in FY 1996 (prior to July 1, 1996) were much lower than projected. Consequently, FY 1997 revenues are anticipated to be high. However, revenues continue to approximate $4.5 million per year and are expected to decrease to some extent each year as substances are delisted and as companies succeed in reducing chemical use below reporting thresholds.

ATTACHMENT A

TOTAL AMOUNTS EXPENDED		TOTAL REVENUES AVAILABLE	
FY'91	875,221.66	FY'90	448,462.50
FY'92	3,002,362.67	FY'91	2,049,163.00
FY'93	3,425,533.04	FY'92	4,757,499.00
FY'94 (a)	6,271,229.62	FY'93	4,813,678.50
FY'95	6,689,551.00	FY'94	4,505,000.00
FY'96	5,662,591.00	FY'95	5,552,000.00
FY'97 (est)	5,346,839.00	FY'96	2,781,000.00
		FY'97	6,100,000.00
TOTAL	31,273,327.99		
		TOTAL	31,006,803.00

a total amounts expended include the following: 10% of the costs of the 21E program (FY'94 and FY'95); fringe benefits (FY'94 and FY'95); and the Cape Cod Community College Program (FY'95)

ATTACHMENT B

Toxic Use Reduction Fund (fund 149)

	FY'91		FY'92	FY'93		FY'94 (c)		FY'95 .	d	FY'96		FY'97 App.
STARTING BALANCE	448,462.50	a	1,622,403.84	3,500,000.00	c	4,889,000.00		3,122,770.38		1,987,000.00		(894,591.00)
FY REVENUES	2,049,163.00		4,757,499.00	4,813,678.50		4,505,000.00		5,552,000.00		2,781,000.00		6,100,000.00
TOTAL AVAILABLE	2,497,625.50		6,379,902.84	8,313,678.50		9,394,000.00		8,674,770.38		4,768,000.00		5,205,409.00
Direct Expenses												
OTA	255,881.65		1,215,716.67	1,232,522.10		1,492,702.00		1,642,700.00		1,730,492.00		1,849,860.00
TURA	222,746.01		624,307.00	519,924.94		815,438.62		964,027.00		910,798.00		1,009,427.00
TURI	339,090.00		983,520.00	1,303,219.00		1,401,000.00		1,387,295.00		1,739,301.00		1,763,114.00
10% of 21E	n/a		n/a	n/a		1,426,089.00	b	1,456,529.00	b	0.00		0.00
Cape Cod CC (7504-0101)			n/a	n/a		n/a		125,000.00		125,000.00		124,438.00
Subtotal	817,717.66		2,823,543.67	3,055,666.04		5,135,229.62		5,575,551.00		4,505,591.00		4,746,839.00
Indirect Expenses												
FRINGE	57,504.00		178,819.00	369,867.00		1,134,000.00	*	1,114,000.00	*	1,157,000.00	(d)	600,000.00
Medicare tax						2,000.00				0.00		
	57,504.00		178,819.00	369,867.00		1,136,000.00		1,114,000.00		1,157,000.00		600,000.00
TOTAL EXPENDITURES	875,221.66		3,002,362.67	3,425,533.04		6,271,229.62		6,689,551.00		5,662,591.00		5,346,839.00
ENDING BALANCE	1,622,403.84		3,377,540.17	4,888,145.46		3,122,770.38		1,985,219.38		(894,591.00)		(141,430.00)
(total available - total expended)												

* FY94 Based on AA expenditures: OTA 1,087,597; TURA 714,267; 10% of 21E 1,152,357

a Revenue collected in FY'90, the first year of the legislation

b 10% of the costs of the 21E prgrm charged to the TURA fund in FY'94 and FY'95 FRINGE RATES: FY91-34.01%; FY92, FY93--27.83%, FY94--33.37%;FY95--31.97% (by law, a % of the amt spent on personnel is charged to any dedicated fund (MGLC 29, s. 5D)

c Based on Comptroller's preliminary FY'94 CAFR

d Comptroller's FY'96 preliminary numbers appear to be inflated. Being investigated

ATTACHMENT C EXPENDITURES

TOXIC USE REDUCTION FUND (FUND NUMBER 149)

Sub	Description	FY'91			FY92			FY'93		
		OTA	DEP	TURI	OTA	DEP	TURI	OTA	DEP	TURI
		2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004
	APPROPRIATION	*350,000.00*	*475,000.00*	*450,000.00*	*1,300,000.00*	*627,711.00*	*1,082,289.00*	*1,479,205.00*	*763,856.00*	*1,466,137.00*
00	**All Expenditures**									
AA	**Regular Emp. Comp.**	119,306.55	53,319.44	114,634.00	384,112.97	310,160.00	327,433.00	659,574.37	440,168.91	282,900.00
BB	**Emp. related exp (meals, memberships, conferences,etc)**	5,463.10		5,448.00	33,467.51	147.00	15,746.00	22,085.42	12,520.18	20,647.00
CC	**Spec. Emps.(interns, seasonals, bd mbrs)**			30,736.00	143,804.43		91,138.00	88,592.93	0.00	85,697.00
DD	**Chargebacks**	2,221.04			4,655.73		75,427.00	5,723.15	0.00	5,065.00
EE	**Admin. Expenses (supplies, postage, phones, ads)**	30,959.96		18,690.00	115,678.39		77,494.00	98,710.32	8,712.85	94,613.00
FF	**Facility Operations**						24,449.00	3,735.38	0.00	66,292.00
GG	**Space rentals and related expenses**			127,160.00	4,817.50		103,172.00	759.42	0.00	
HH	**Consultants**	61,336.13	157,500.00	14,416.00	209,902.07	314,000.00	130,675.00	257,395.35	46,196.54	467,622.00

		FY'91			FY92			FY'93		
		OTA	DEP	TURI	OTA	DEP	TURI	OTA	DEP	TURI
		2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004
JJ	***Operational services (janitors, HW, snow, rubbish removal)***		11,926.57	0.00	3,675.00		1,279.00	988.00	2,332.93	89,639.00
KK	***Equipment***	34,468.35		28,006.00	307,630.47		136,029.00	69,242.68	9,993.53	156,921.00
LL	***Eqpmt leases***	2,126.52			7,972.60		678.00	25,715.08	0.00	4,333.00
MM	***Purchase Service***									29,490.00
RR	***Benefit Programs***									
	EXPENDITURES	*255,881.65*	*222,746.01*	*339,090.00*	*1,215,716.67*	*624,307.00*	*983,520.00*	*1,232,522.10*	*519,924.94*	*1,303,219.00*

Sub	Description	FY'94			FY'95			FY'96 Actual		
		OTA 2020-0100	DEP 2210-1000	TURI 7220-0004	OTA 2020-0100	DEP 2210-1000	TURI 7220-0004	OTA 2020-0100	DEP 2210-1000	TURI 7220-0004
	APPROPRIATION	*1,829,313.00*	*953,897.00*	*1,466,137.00*	*1,850,323.00*	*1,005,734.00*	*1,464,290.00*	*1,830,882.00*	*1,000,332.00*	*1,763,114.00*
00	All Expenditures									
AA	Regular Emp. Comp.	1,087,597.00	714,267.46	366,683.00	1,139,989.00	802,070.00	431,656.00	1,207,582.00	767,404.00	507,644.00
BB	Emp. related exp (meals, memberships, conferences,etc)	35,088.00	7,923.53	29,065.00	36,467.00	3,081.00	45,410.00	40,687.00	2,500.00	41,642.00
CC	Spec. Emps.(interns, seasonals, bd mbrs)	51,499.00		102,222.00	68,669.00	0.00	80,574.00	83,244.00	0.00	118,406.00
DD	Chargebacks	24,565.00		4,124.00	22,206.00	13,427.00	5,257.00	27,419.00	14,383.00	6,736.00
EE	Admin. Expenses (supplies, postage, phones, ads)	136,522.00	10,418.41	180,402.00	120,989.00	29,150.00	198,544.00	134,276.00	13,119.00	156,251.00
FF	Facility Operations			24,271.00	0.00	0.00	22,703.00	0.00	0.00	14,137.00
GG	Space rentals and related expenses	3,055.00			4,968.00	72,456.00	0.00	0.00	77,323.00	
HH	Consultants	123,622.00	19,922.60	587,164.00	126,409.00	19,253.00	474,079.00	188,150.00	0.00	676,921.00

			FY'94			FY'95			FY'96 Estimated	
		OTA	DEP	TURI*	OTA	DEP	TURI*	OTA	DEP	TURI
		2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004	2020-0100	2210-1000	7220-0004
JJ	***Operational services (janitors, HW, snow, rubbish removal)***	3,853.00	7,999.86	103,794.00	300.00	22,498.00	71,899.00	0.00	36,070.00	135,398.00
KK	***Equipment***	23,098.00	54,906.76	26,496.00	118,642.00	2,092.00	45,677.00	37,861.00	0.00	66,476.00
LL	***Eqpmt leases***	3,803.00		2,331.00	4,061.00	0.00	5,889.00	11,273.00	0.00	4,472.00
MM	***Purchase Service***			18,688.00			5607			
RR	***Benefit Programs***									11,217.00
	EXPENDITURES	***1,492,702.00***	***815,438.62***	***1,445,240.00***	***1,642,700.00 a***	***964,027.00***	***1,387,295.00***	***1,730,492.00***	***910,799.00***	***1,739,300.00***

OTA STAFF - FY 96

Susan Altree Lanza	Program Coordinator III
Daniel Balboni	Intern Engineer
Cynthia Barakatt	Environmental Analyst IV
Roland Beaudette	Environmental Engineer II
Richard Bizzozero	Environmental Analyst IV
James Cain	Environmental Analyst III
Kathryn Craig	Environmental Engineer II
Lisa DuFresne	Environmental Analyst III
John Flynn	Environmental Analyst III
Scott Fortier	Environmental Engineer IV
Serena Foong	Intern Engineer
George Frantz	Environmental Analyst IV
Teresa Freyer	Administrative Assistant II
Arthur Gamache	Environmental Engineer III
Marina Gayl	Environmental Analyst III
William Griffin	Environmental Engineer IV
Matthew House	Intern Engineer
Jennifer Hunt	Environmental Analyst II
Azin Kavian	Environmental Engineer II
Barbara Kelley	Director, OTA
Ariadne Kuczwaj	Intern Engineer
John LaPlante	Environmental Engineer II
Nathanael Lloyd	Intern Engineer
Christopher MacIsaac	Administrative Assistant I
William McGowan	Environmental Engineer V
Sean McGuigan	Intern Engineer
William McLaughlin	Intern Engineer
John Mesheau	Intern Engineer
Philip Milmoe	System Analyst II
Hazrat Noorzad	Environmental Analyst II
Grace Offen	Program Coordinator II
Joseph Paluzzi	Environmental Engineer III
Nancy Phillips	Program Coordinator II
Hugh Pilgrim	Regional Planner IV
John Raschko	Environmental Engineer IV
Richard Reibstein	Environmental Analyst V
Kenneth Soltys	Environmental Analyst IV
Richard Torborg	Financial Analyst IV
Audrey Tyler-Casey	Program Coordinator II
Paul Richard	Environmental Engineer IV, STEP
Gina McCarthy	Director, Administrative Council
Martin Suuberg	General Counsel, EOEA

TOXICS USE REDUCTION INSTITUTE STAFF
FY 1996

Ken Geiser	Director
Michael Ellenbecker	Associate Director for Research
Jack Luskin	Associate Director for Education and Training
Beverly Johnson	Associate Director for Administration
Robert Tivnan	Training Associate
Jody Hensley	Training Associate
Steve Greska	Training Associate
Anne Basanese	Special Events Coordinator
Elizabeth Harriman	Research Associate
Monica Becker	Research Associate
Jodie Siegel	Research Associate
Karen Thomas	Technology Specialist
Carol LaBlanc	Surface Cleaning Laboratory Coordinator
Jay Jankaukis	Laboratory Assistant
Janet Clark	Technology Transfer Coordinator
John Beardsly	Librarian
Diane Barrus	Technology Transfer Center Assistant
Robin Smith	Secretary
Evelyn Whiting	Receptionist
Cathy Callahan	Bookkeeper
Janette Schley	Administrative Assistant
Pat Gittis	Public Outreach Specialist

STAFF NAME	TITLE	PROGRAM	FUNCTION
Funded by TURA Funds			
Roberta Baker	EA IV	Region	Western - TURA Integration/Inspections
Anita Baltzersen	EA IV	Region	Central - TURA Integration/Inspections
Martha Caldwell	EA III	Region	Central - TURA Integration/Inspections
Cynthia Chaves	RP IV	TUR Boston	Regulation & Policy Development
Steve Edelheit	RP IV	OPI	Bureau Training Coordinator
Doug Fine	RP V	OPI	Office of Program Integration Director
Lynn Heisey	EA IV	TUR Boston	Data Systems Manager
Walter Hope	RP II	TUR Boston	Program Administration
Sandra Hurlbut	EA IV	Region	Northeast - TURA Integration/Inspections
Tracy Klay	RP III	TUR Boston	Planner Certifications and Management
Geri Lambert	EA V	Enforcement	Training, Penalty Collection & Tracking
Bill McGovern	SA III	MIS	TURA/FMF/Business Objects Programmer
Steve McKenna	RP II	TUR Boston	Reporting & Planning Specialist
Carl Natho	EA IV	Region	Southeast - TURA Integration/Inspections
Susan Peck	EA VI	TUR Boston	Senior Policy Analyst
Gene Romero	EA IV	IWW	Integration of TURA in IWW Regs. & Operations
Alissa Whiteman	Counsel II	Legal	TURA Program Attorney
Funded by other funds			
Robert Bois	EEV	TUR Boston	TURA Related Enforcement
Steven DeGabriele	PMVIII	HM	Acting Hazardous Materials Division Director
Carl Dierker	PMIX	BWP	Assistant Commissioner
Thomas Hughes	RPIV	OPI	Bureau Policy Coordinator
Kim Kreiton	RPIII	OPI	Bureau Compliance/Enforcement Coordinator
William Panos	PMVII	TUR Boston	TURA Program Director
Paul Walsh	RPIII	TUR Boston	Data & Report Review
Susan Willis	EAIV	OPI	DEP Project Manager

Other Staff, Funded with TURA Funds

Temp Staff 2-5 as needed.

New OTA Case Studies Fiscal Year 1996

"Cranston Print Works Uses Carbon Dioxide to Replace Sulfuric Acid for pH Adjustment" -- This textile printer and finisher eliminated use of 2.66 million pounds of sulfuric acid per year, saving an estimated $80,000 annually in purchase and maintenance costs.

"Mastex Industries Reduces Chemical Use in Cloth Cleaning and Dyeing Operations" -- This Holyoke company eliminated 20,000 pounds of chemicals per year through substitution and reformulation.

"Tubed Products Introduces Ultraviolet Curing of Inks and Coatings" -- An early adopter of UV curing technology, this Easthampton firm cites its early use of UV ink and coating systems as a major factor in its current position as the largest U.S. supplier of plastic squeeze tubes.

"Howard H. Sweet Eliminates Emissions of Five Chemicals" -- The Attleboro jewelry manufacturer made production line changes that eliminated use of TCE, Freon, acids and cyanide. These efforts resulted in reduced compliance requirements for the company and savings of more than $40,000 annually.

"Elimination of TURA Chemical Reporting at The Robbins Company" -- This updated case study shows how the Robbins Company has reduced chemical use in wastewater treatment by 99%, reduced hazardous waste generation by 99%, and cut water use by 98.5%. The company has saved more than $100,000 a year and no longer has to report chemical use under TURA or chemical releases under EPCRA.

"Reducing Mercury Discharge at a Testing Laboratory" -- This testing lab used source reduction techniques to eliminate 90% of the mercury entering its wastewater.

"Gentex Optics Eliminates Freon Use in Cleaning and Priming Operations" -- This Dudley manufacturer of polycarbonate eyewear lenses developed a new aqueous system for cleaning and priming optical lenses, eliminating the use of Freon and allowing for increased production yields, improved quality, and lower processing costs.

"Foxboro Reduces VOC Emissions while Eliminating Cadmium and Cyanide Discharges" -- After early successes with TUR techniques in the late 1970s, this manufacturer of industrial process controls established a Total Quality Environmental Management (TQEM) team in 1992, dramatically reduced VOC emissions and eliminated use of CFCs, cadmium and cyanide. The firm calculates cost savings of nearly $900,000 since 1993, and company management views TUR as the most cost-effective means of addressing increasingly stringent environmental regulations.

OTA Events Database Listing

Name	Location	Date
Chromium Electroplaters Teleconference	5 regions	11/15/95
Clean Air Act Compliance for Chromium Electroplaters	Auburn	11/15/95
Clean Air Act Compliance for Chromium Electroplaters	Easton	11/15/95
Clean Air Act Compliance for Chromium Electroplaters	Lexington	11/15/95
Clean Air Act Compliance for Chromium Electroplaters	Springfield	11/15/95
Clean Air Compliance for Wood Furniture Manufacturers	Easton	9/8/95
Clean Air Compliance for Wood Furniture Manufacturers	Fitchburg	9/8/95
Clean Air Compliance for Wood Furniture Manufacturers	Wellesley	9/8/95
Clean Air Compliance for Wood Furniture Manufacturers	Westfield	9/8/95
Environmental Expo	Boston	5/7/96
Financial Assessment of Environmental Projects	Weston	9/14/95
Financial Assessment of Environmental Projects	Weston	9/18/95
Financial Assessment of Environmental Projects	Weston	9/21/95
Healthy Air In Mass Schools	Dedham	3/11/96
Healthy Air in Mass Schools	Ashland	1/16/96
MP2 Clinic	Taunton	3/13/96
MP2 Clinic	Springfield	3/20/96
MP2 Clinic	Haverhill	3/27/96
MP2 Clinic	Lexington	4/9/96
MP2 Clinic	Worcester	4/18/96
MP2 Vendors/Suppliers (PINE EXPO)	Marlborough	5/29/96
MP2 Workshop	Lowell	2/7/96
MP2 Workshop	Taunton	2/15/96
MP2 Workshop	Worcester	2/20/96
MP2 Workshop	Springfield	2/29/96
MP2 Workshop	Waltham	3/14/96
MP2 Workshop	Marlborough	4/4/96
Metal Working Industry Wkshop (Industry Specific)	Waltham	1/20/96
NICE 3 Informational Workshop	Worcester	11/21/95
One-day TURPlanner Conference (afternoon)	Springfield	10/24/95
One-day TURPlanner Conference (afternoon)	Taunton	12/14/95
One-day TURPlanner Conference (morning)	Springfield	10/24/95
One-day TURPlanner Conference (morning)	Taunton	12/14/95
Printers Partnership Workshop	Lynnfield	12/14/95
Regulations, Incentives and the ISOs: Making the Connections	Needham	6/6/96

Fiscal Year: 7/1/95 - 6/30/96

OTA Events Database Listing

Name	Location	Date
TUR Planning Assistance Workshop	Worcester	9/28/95
TURA Plan Update	Waltham	4/16/96
TURA Plan Update	Taunton	4/22/96
TURA Plan Update	Haverhill	4/24/96
TURA Plan Update	Worcester	4/30/96
TURA Plan Update	Springfield	5/2/96
UV Coatings Conference	Needham	5/23/96
Water Conservation/Neponset Watershed	Milton	1/23/96
Water Reuse & Toxic Reduction	Boston	9/15/95